THE ECONOMICS OF LOW COST HOUSING IN PENANG

by

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PREFACE

Purpose and Scope of Study

This academic exercise on low cost housing was chosen not only because housing is a subject in which everyone has an interest but it is a problem that every country is faced with. In a country like Malaysia which has a very high rate of population growth and is experiencing rapid urbanization, the housing problem becomes more acute and urgent. The country not only has to face the rising pressure of a housing shortage and overcrowding but also an increase in squatting, rise of a rental class and the growing disparity between the cost of urban shelters and what the workers can afford.

The purpose of this exercise is to make a study of the economic aspects of the low cost housing programme in Penang that has been undertaken by the Federal and State governments and the Georgetown City Council to relieve the general housing shortage and overcrowding especially prevalent among the lower income groups.

The area of study has been localised to Penang mainly because the subject is complex and can therefore be best studied by examining efforts in a specific state. However as far as possible references will be made to housing in the country as a whole and to Kuala Lumpur, Singapore and Britain for comparative purposes and to enable the subject to be viewed from a wider perspective.

The study will cover a ten year period from 1957, the period around which the low cost housing programme first started, to 1967.

Sources of Information

A lot of material in this exercise consists of first hand information and primary data gathered through a series of interviews with officials of the Ministry of Local Government and Housing, the Penang State Secretariate, the Georgetown City Council, the Federal Department of Town and Country Planning and the Housing Trust of Malaysia.

This exercise is also based to a considerable extent on unpublished literature pertaining to low cost housing in the form of memoranda and reports which are of a restricted and confidential nature. Any quotations and references from this source is not permitted without the prior knowledge and consent of the authorities concerned, namely, the Federal Department of Town and Country Planning and the Housing Trust of Malaysia

Secondary sources of information came from published literature on housing in the United States, Britain and Singapore.

Acknowledgements

I would like to express my appreciation to the officials of the...

Ministry of Local Government and Housing, the Federal Department of Town and Country Planning, the Penang State Secretariate, the Georgetown City Council and the Housing Trust whom I saw in the course of my study.

I would also like to thank my supervisor Dr. Lim Chong Yah for his guidance and advice.

Definition of Low Cost Housing

What is housing? Basically it is a highly complex consumer product of a bulky, durable and permanent nature with a fixed location and once built it tends to remain in existence for many years, frequently long after it has served its usefulness and becomes a part of the land. Housing supply is made up of a variety of significant housing types. In fact the total market for housing represents a collection of sub-markets where different prices exist for different characteristics of housing units in contrast with markets for other commodities where standardization and a 'one price' tendency are common. It is also made up of numerous groups with different incomes and family patterns.

Here we are dealing with a section of the housing market - low cost housing for the lower income groups.

Low cost housing is a very general term and difficult to define. From the point of view of capital costs, a house is included in the category of low cost housing if it involves a low initial capital outlay or low building costs. Houses are built either to be rented out or to be sold. For economic and social reasons some families in the community prefer to rent their houses, while others choose to own their houses. Thus low cost housing can also be taken to mean low rental housing where rent is made as low as possible for the low income families so as not to take up too great a percentage of the family income. However, in the final analysis cost should be the main consideration for the element of capital outlay comes into play in determining the rent to be paid.

Even within this definition it still has to be determined as to what constitutes low cost housing because it has to be decided how low cost should be before it can be considered as 'low cost'. Each building authority has its own range of costs within which a house would fall into the category of low cost housing.

The Federal Government has not come up with a specific definition for low cost housing but it gives the following list of house types and costs as a guide to the type of houses it would consider as low cost housing.[1]

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[1] Based on a circular sent from the Ministry of Local Government and Housing to the Georgetown Town City Council.

Type		Cost(Land Piling and Site Development not Included)
1. Wooden House	TB 2/1 B Plan	approx. $2,000 per unit (2 rooms)
	3/1 B Plan	approx. $3,000 per unit (3 rooms)
2. Wooden Houses for fishermen	TN 2/1 Plan	$2,000 (2 rooms)
3. Terraced Houses (hollow cement block)	L 3/7 Plan	$4,000 (3 rooms)
4. Flats - 4 storeyed Flats		$4,000 (2 rooms) $5,000 (3 rooms)

According to the Malayan Borneo Building Society[2] classification, a low cost house is one that falls below the $8,000 range.

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[2] Based on interview with Housing Manager of the Malayan Borneo Building Society (Penang).

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CHAPTER I

BACKGROUND TO THE HOUSING PROBLEM

Survey of Housing Conditions in Penang

As no comprehensive housing and density survey has been done for the state not much information is available to give a clear picture of the housing situation especially with regard to the rural and mainland areas. Housing statistics have had to be based on a number of assumptions and estimates. The main concentration will be on Georgetown City[1] since the greatest housing problem occurs within Georgetown and because the bulk of survey investigations based on outline sample surveys were all undertaken within the city limits and the immediate peripheral areas.

a) Housing in the Rural Areas

The bulk of housing within the rural areas of the state is of the traditional type built of wood with 'attap' or corrugated iron roofing. The cost of construction of such a house averages from $2,000 - $3,000 and usually has an accommodation of 2 or 3 habitable rooms.[2]

Even within the rural areas some form of 'squatter' housing can be found which varies from the most temporary type of 'attap' shelter with accommodation of one communal room variety to the more traditional and semi-permanent structure with 2 or 3 habitable rooms. Construction cost varies but may be as low as $500 to $1,000. 2 or 3 families may share such accommodation and densities of 15 - 26 persons per house or more are encountered especially in the semi urban and urban areas.[3]

The general housing shortage and tendency to have large families prevalent throughout the country can be observed in the rural areas in the overall high densities - usually accepted as 6 or more persons per house i.e. 2 to 3 persons per habitable room for throughout the rural and semi urban areas.[4]

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[1] Georgetown covers an approximate area of 9.6 sq. mls. in the North-west end of the island and is bounded by the city limits which stretches from Tanjong Tokong Road area in the north, Boundary Road in the west and to Udini Road towards the south.

[2] By definition a habitable room is a room which is normally used for living or sleeping. Subdivisions of rooms, cubicles or partitioned areas are not included within the definition.

[3] Penang Master Plan, 1964, p. 81

[4] Ibid

Due to the lack of available data it is not possible to show housing conditions through types of tenancy but a rough idea can be gauged where it can be seen that owner occupied houses are more common in the rural areas as compared to the urban areas.[5] Data on rents charged are also not available but as can normally be expected, the rents charged are generally lower than that found in the towns. 'Attap' housing in most rural areas may be rented for $25 - $30 per month while the minimum rent per room in Georgetown is $30 and more.[6]

b) Urban Centres and Sub-Centres

Within village centres and in the central areas of the larger towns the most common type of accommodation is the shop house (nearly all of which are of 2 storey permanent construction) consisting of the shop premise on the ground floor, with lavatory, accommodation and washing facilities for the whole unit at the rear and normally 3 habitable rooms on the first floor. The building is on a plot of 20 ft. frontage and an average depth of 60 ft. Density within such dwellings is high for, with the housing shortage, especially in the urban area of Georgetown, rooms may be let and later the original tenants will sub-let and sub-sub-let again with internal partitioning while they themselves move out to much better property in the suburbs on the proceeds. Within the overcrowded centre of Georgetown 30 and more persons per shop house is not uncommon, giving rise to city slum conditions in which disease can flourish.[7] Buildings built originally for one family were made to house 10 or more without privacy, light, sanitation or any of the elementary amenities of life. Ten families might have to share a single tap, a single latrine and a single cooking space.[8] The normal rent for a small cubicle is between $15 to $20. In the shop houses the rent for the front room is about $60 per month; $40 for a middle room and $30 for a back room.

From a survey conducted for the central area of Georgetown an idea of the high residential density, the high overall percentage of rented accommodation and the general housing ...

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[5] Household Sample Survey 1957

[6] Penang Master Plan, 1964, p. 81.

[7] Penang Master Plan, 1964, p. 82.

[8] Based on personal observation.

TABLE 1.

RESIDENTIAL DENSITY, AND PERCENTAGE FLOORSPACE DEVOTED TO RESIDENTIAL USES (FULL COVERAGE)

	Area 0	Area 3	Area 6	Total
Total Floorspace (sq. ft.)	570,903	727,919	858,289	2,157,161
Percent Residential	61%	84%	75%	74%
Residential Density (persons/100 sq. ft.)	1.38	0.81	1.05	1.01
Mean household size	5.15	5.1	6.0	5.55
Mean households per house	2.67	2.20	2.55	2.46
Mean household size (sample)	4.95	5.48	6.26	5.56
Standard Error	0.41	0.38	0.39	0.21

Source: W. D. Mctaggart, Social Survey of Penang, p. 7.

conditions can be formed.[9] It was found that the bulk of the population lived in terrace or shop houses, often at very high densities, with several households sharing the same house. Table 1. shows that the mean households per house is 2.46.

Table 2. shows that owner occupancy is very restricted. The great majority of the inhabitants of all 3 areas live in some form of rented accommodation, whether tenancy or sub-tenancy, accounting for about 87% of the total.

From table 2. also, several different forms of tenure are distinguished. 38.8% of the residents are tenants who rent a building direct from the owner, who may be either an individual or institution. Tenancies as such are controlled and subject to limits on the amount of rent payable. But many of these tenants are also 'chief tenants' who sub-let part of the premises to other householders. The percentage of sub-tenants is as high as 40%. These sub-tenants pay rent not directly to the owner but to an intermediary. There are also cases of partial renting where a number of households shared the burden of rent equally among themselves, not one of them therefore claiming to be the Chief tenant. A small percentage is 'institutional tenants' who are those persons given housing by their employer, or by some other similar agency.[10]

The Housing Problem

The housing problem in Penang is made up of several features which can be identified as the following: -

(i) A shortage of housing arising from a growth of population that has been more rapid than the rate of construction of dwellings.

It is estimated that the population of Malaya is increasing at an average annual rate of about 3.0%[11] or by approximately 300,000 people. Assuming an occupancy rate of 6 persons per dwelling this is equal to about 50,000 housing units. In Penang the population has increased by over 40% in the last ten years from 572,110 in 1957 to an estimated 743,833 on 31st December 1966. Again, assuming an occupancy .....

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[9] A social survey of Georgetown conducted by the Geography Department, University of Malaya. Three areas of study were selected: - Area 0 - the area fronting on Campbell Street; Area 3 - the area between Burmah Road and Macalister Road; Area 6 - around Brick Kiln Road.

[10] W. D. Mctaggart, Social Survey of Penang, p. 6 - 10.

[11] First Malaysian Five Year Plan, 1966 - 70.

TABLE 2

FORMS OF TENURE OF HOUSING, AND MEAN AND MEDIAN RENTALS PAID BY TENANTS (SAMPLE SURVEY)

	Area 0		Area 3		Area 6		Total	
	No.	%	No.	%	No.	%	No.	%
Owner Occupier	1	1.0	5	5.3	3	2.9	9	3.0
Tenant	31	29.8	42	44.7	44	42.8	117	38.8
Sub-tenant	57	54.8	30	31.9	33	32.0	120	40.0
Partial Renting	4	3.8	2	2.1	19	18.4	25	8.3
Free	3	2.9	6	6.4	4	3.9	13	4.3
Institutional	8	7.7	9	9.6	-	-	17	5.6
TOTAL	104	100.0	94	100.0	103	100.0	301	100.0
Median Rent ($ per month)	22.50		26.63		25.23		24.55	
Mean Rent ($ per month)	40.91		31.77		26.90		31.58	

Source: W. D. Metaggart, Social Survey of Penang, p. 10.

rate of 6 persons this is equivalent to about 2,960 housing units annually. The housing construction rate falls far short of this figure. In the period 1957 - 63 only a total of 3,176 'official' houses were completed within the Georgetown city area.[12]

(ii) This general shortage has been concentrated on a relatively small number of towns owing to the trend towards urbanization accelerated by the continuous drift of rural people.[13]

West Malaysia is one of the most highly urbanized countries in South East Asia. The 1957 census showed that 42.5% of the population lived in centres of 1,000 and more and 26.5% in centres of 10,000 or more. By way of contrast, in Thailand in 1960 only about 11% lived in centres of 10,000 or more.[14] There are 3 towns with population exceeding 100,000, one of which was Georgetown. It is thus not surprising to find that the 2 areas which happen to have the most serious housing problems in the country are Kuala Lumpur and Georgetown.

(iii) The third aspect relates to the conditions of the existing 'stock' of houses where the minimum standards of health and sanitation are extremely low particularly in low income family dwellings which lack proper water supply, elementary sanitary and drainage facilities.

(iv) Overcrowding of dwellings

In Penang it is not unusual to find 10 to 15 persons in a dwelling, sometimes the same number share a room. Occupancy rates[15] can be used as a guide to living conditions within a dwelling and in the assessment of the extent and degree of overcrowding. Normally in Western countries an occupancy rate of 1.0 adult equivalents per habitable room is taken to be the limit above which overcrowding conditions occur.

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[12] Penang Master Plan, p. 88

[13] For further reading on urbanization, see Lim Chong Yah, Economics Development of Modern Malaysia, p. 215 - 220.

[14] Social Survey of Penang, p. 1.

[15] Occupancy rates are based on the number of 'adult equivalents' per habitable room; the relationship of adult equivalent to total population (or persons) being determined as follows; those over 10 years are counted as adults, children between the ages of 1 and 10 years are counted as ½ and infants under 1 year are not counted. From the population structure in Penang, adult equivalent amount to 80% of the total population.

For a comparative standard locally, a figure of 1.5 adult equivalent or 2.0 persons per habitable room is suggested. If related to minimum accommodation this would approximate to 50 sq. ft. (4.6 sq. meters) of living space per person. Figufes for the average occupancy rate within Georgetown city show that there has been an increase from 2.3 to 2.5 adult equivalent per habitable room over the period 1947 - 57 indicating that overcrowding had intensified.[16]

TABLE 3

ESTIMATED OCCUPANCY RATE IN GEORGETOWN FOR THE YEAR 1964

1964	No. of Houses	Estimated Population	Adult Equivalent	Estimated Occupancy Rate
TOTAL	24,500 (84,000)*	270,000	216,000	2.6

*Figure in brackets denotes the total number of habitable rooms.

Source: Penang Master Plan, p.

(v) The existence of Slums

Slums can be found in almost all urban centres. It has been found to be impossible to prevent the emergence of slums under the pressure of mass movements of people.

(vi) A Predominance of Squatters in the Urban Centres

Squatting is the 'appropriation of another's land for one's own use without title or right' and may occur on public or private property. The continuing pressure for accommodation has not only given rise to slums in the city and town areas but has also resulted in the growth of extensive squatter areas for as the population continued to expand some families, unable to find accommodation in the city at all, were compelled to build shelters for themselves illicitly on any land they could find. Usually a type of ground rent is paid to the landowner but through long established practice, squatters 'rights' and 'claims' to land have taken on a semi legal aspect. With the passage of time such an accumulation of densely populated squatter settlements which form a girdle of squalor and misery around the central town area, becomes a problem and since it involves many latent political implications, no direct...

[16] Penang Master Plan, 1964, p. 90.

PLATE 1. SQUATTER HOUSING IN KAMPONG MAKAM (GEORGETOWN)

PLATE 2. 'TEMPORARY' SQUATTER HUTS (KAMPONG MAKAM)

PLATE 3. COOKING AND WASHING FACILITIES IN A SLUM HOUSE (DATO KRAMAT, GEORGETOWN)

PLATE 4. A SLUM AREA (DATO KRAMAT)

and comprehensive solution has yet been forth coming.

(vii) The Disparity in Income and Shelter Cost

The proportion of income which a family can pay for shelter varies according to the country and the times. The disparity between what the lower income groups can pay and the rent required to carry a building and armotise its cost has generally widened with the years because of technological gap, rising cost of materials, labour shortage and building laws requiring more elaborate standards. The steady movement towards increasing government aid in housing indicates this disparity between shelter cost and income. Costs have risen without corresponding increase in wages.

Why the Government has to Undertake Low Cost Housing

The whole basis of housing is to provide for the shelter requirements of the population comprising family groups differing in size, composition and income levels. As long as our population and new family formation rates keep growing there will always be a need for housing. But need only becomes demand if accompanied by the ability to pay and from the stand point of paying ability the family's income is of paramount importance.

The fact that builders do not build to a medimprice but build to demand in certain price brackets makes housing out of the reach of many people, particularly the lower income groups. Private developers operate on the basis of profit expectation. With rising construction and land costs, private builders have found it increasingly difficult to build low cost houses while at the same time making a reasonable profit.

In Penang no low cost housing is undertaken by private enterprise for it is unprofitable to build below the $10,000 price range. The type of houses they build usually range from $15,000 to $50,000. It can clearly be seen that this type of housing only caters for the middle and upper income groups. Even with the help of loans from finance companies the lower income groups earning $300 per month and less still find it difficult to pay for such houses because a loan of $10,000 would involve a monthly commitment of $92. As a rule, finance companies like the MBBS[17] insist that the purchaser must have an income four times that of his monthly commitment which means that for a person to be able to purchase such a house he must at least have an income of $382.[18]

There is thus a group of consumers who, because of their low incomes, have no effective vote and are unable to compete in the housing market. It is these people whose housing needs are most urgent for not...

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[17] MBBS - Malaya Borneo Building Society.

[18] A thumb's rule on housing expenditure is that it should not be more than 25% of total income.

only are large numbers of their houses substandard physically but they are overcrowded and heavily concentrated in decaying areas or slums. This 'overcrowding' factor is a reflection of the lack of provision and the need for low cost housing.

The fact that about 80% of the population fall within this income category of $300 per month and less brings out the enormous size of this group of under-privileged in housing. Housing, if left entirely to private enterprise, would be catering to the needs of only a small percentage of the population. In Penang about 300 units are built annually by private builders and since the estimated housing needs for Penang is in the region of 3,000 units a year, this means that only 10% of the population are being provided for.

CHAPTER II

HOUSING NEEDS

Methods of Assessing Housing Needs

Any serious long term housing programme undoubtedly has to start with an assessment of housing needs. 'Housing need is the extent to which the quantity and quality of existing accommodation falls short of that required to provide each household or person in the population, irrespective of the ability to pay or of particular personnal references, with accommodation of a speficied minimum standard and above'.[1] In almost all countries the state has accepted some responsibility for trying to overcome housing shortages and raise the standards of accommodation. A forecast of housing needs would enable the government to assess and frame its policies as well as plan its housing programme more effectively.

In estimating housing needs, the present and future housing needs as well as replacement needs in a country have to be taken into account. Future housing needs are determined to a decisive extent by demographic development. The usual procedure is to obtain a projection of population in the target year by age, sex and marital status. In general there is a close relationship between a given population's structure and the number of households it contains. If one applies the assumed standard of accommodation to the calculated household population, one can find the number and size distribution of dwellings required for normal occupation.

/a If the number of households at future date is to be predicted at all accurately, it is necessary to have a fairly detailed estimate of the population for that date classified by age, sex and marital status. However, in under-developed countries like Malaya where the appropriate statistics are not available and detailed estimates cannot be attempted, it becomes necessary to conduct an ad hoc projection. One method of assessing the number of households is based on the assessment of the number of complete families in accordance with the number of married women in the individual five-year age groups. This is supposed to give more precise results then if it were based on assessment of the average household size derived from the whole population as the number of households and their size are considerably influenced by the actual age structure of the population and its changes.[2]

In Britain the headship rate method is used for the projection of the future number of households. This works on the assumption that counting the chief earner or senior member of a household or its head is equivalent to counting the number of households. By grouping these heads..

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[1] Lionel Needleman, the Economics of Housing, p. 18

[2] Jiri Musil, Housing Needs and Policy in Great Britain and Czechoslovakia, p. 76 - 78.

by age, sex and marital status, it is possible to project the number of households. However, headship rates cannot be used without some corrections and some economic and social assumptions on future household formation.[3]

In addition to dwellings intended to cover the natural increment of the population or households, it is also necessarily to take into consideration the dwellings needed to replace those that have to be demolished. There is both a long and short term replacement problem. The short term task is to catch up with past arrears in replacement and to clear the large numbers of sub-standard dwellings which should have been demolished and replaced long ago. Once the existing backlog has been worked through, a continuous long term programme of replacement will be required to prevent any further accumulation in the future number of houses unfit for occupation. The problem here is to decide on the necessary or optimum rate of replacement. Countries like the United States and Netherlands have an 'objective' method for measuring the quality and soundness of houses but in Britain there are no such methods, though there are local authorities' slum clearance proposals based on the assessment of the number of dwellings in the slums. There is also another method which is based on the assessment of the reasonable length of life of a dwelling. In Britain it is officially accepted that a hundred year life is a rough working rule.[4]

As far as present housing shortage is concerned, it is assessed in accordance with the selected criteria of the standard of living at the time of enumeration. An analysis of the state of housing stock ascertained by means of a census would evaluate the number of households not living in an independent dwelling of their own, those living in defective dwellings and the number of households living in over-crowded dwellings. This would enable a determination of present housing needs.

In Britain present housing needs are estimated by comparing existing households and the available dwellings to determine the numerical shortage of houses. However, the total number of households ascertained by a census is not necessarily the same as the number of households requiring separate dwellings while on the other hand there are census enumerated households who do not require separate dwellings. According to J.B. Cullingworth, it is reasonable to assume that 75% of sharing households require separate dwellings.[5]

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[3] Ibid, p. 112

[4] Minister of Housing, House of Commons Debates, 6 November, 1961, Col. 650, as quoted in Jiri Musil, Housing Needs and Policy in Great Britain and Czechoslovakia, p. 116.

[5] J.B. Cullingworth, Housing Needs and Planning Policy, p. 24. He comments 'of necessity a somewhat arbitrary assumption must be made. And owing to the nature of the available statistics it does not appear that a complicated formula would have any more realistic than a simple one'.

In countries like Britain and West Malaysia where local authorities also undertake low cost housing there is a need for local estimates of housing requirements. The nationwide estimates of housing needs are mainly theoretical and are the basis of the general policy of the government while the housing estimates prepared by local authorities have a more practical impact and are more closely connected with town planning. There are a wide variety of methods which are applied in local estimates. Some authorities do not have their own estimates and proceed in an empirical way while some use very simple methods and others more exact. The most often used methods for preparing local housing estimates are: -[6]

(a) waiting list;

(b) to calculate the number of needed dwellings in the future by dividing the estimated future number of the population by the average size of the household enumerated in the last census;

(c) to stipulate in advance the revised density levels at which the population is to be housed and to plan in terms of persons per dwelling or persons per acre.

In general these methods are found to be unsatisfactory. The waiting lists are not reliable because some families who are in need of new dwellings are not in the list while other families whose needs are not so urgent are listed. The second ignores changes in the size of the households while the third does not indicate the number and size of required dwellings and if it is based on a stipulated density of persons per dwelling the average used will be arbitrary.

For a more precise method it should be based on a study of the future 'occupancy rates' which are then used in connection with population projections. Local authorities like Aberdeen estimate by non-linear extrapolation the future minimum size of the household and assume the lowest occupancy rate to be 2.8. There is only one assumption concerning occupancy rates and of the future number of people in the city and therefore only one estimate of housing needs.

Housing Needs in West Malaysia

Different methods of assessing housing requirements are used in accordance with the situation of the national economy and the quality of statistical data available. Where there is a huge housing shortage, nobody is worried about methodological problems in estimating housing needs in a more sophicated way. And it is not easy to make any exact assessment of housing needs when no pertinent statistical data are available or where it is characterised by its paucity. Census carried out is limited to population data while the actual state of the housing stock is not....

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[6] Jiri Musil, Housing needs and policy in Great Britain and Czechoslovakia, p. 119.

ascertained. This situation can be said to apply to West Malaysia.

Rough estimates of West Malaysia's low cost housing requirements have been worked out by the Ministry of Local Government and Housing, based on population projections and on the avarrage size of households as well as certain other assumptions. It is estimated that the present annual population increase in West Malaysia is roughly about 300,000. Assuming an average occupancy rate of 6 persons per dwelling, then 50,000 new units will have to be built annually to meet this increase in population. (If the present population increase rates were to continue, then by 1982 an annual figure of 95,000 new units will be required to meet the annual increase of roughly 570,000). If 50% of this housing need is met by the private enterprise, this leaves a figure of 25,000 housing units to be provided by the public housing authorities.

This figure given is only meant to meet the increase in population. The present backlog in urban housing resulting from overcrowding and the presence of squatters on the existing housing areas has also to be taken into consideration. No national housing survey has ever been undertaken so that the figures worked out for the present backlog are just estimates based on certain assumptions. If is estimated that in Kuala Lumpur about 60% of the total population is inadequately housed. The present backlog figures are calculated on the assumption that similar conditions prevail in the other urban areas of West Malaysia. According to 1962 estimates, 3.2 million people are located in urban areas and out of this, 1.92 million are supposed to be in-adequately housed. (Refer Table 5). Again, assuming an average occupancy rate of 6 persons per dwelling, the present backlog would work out to be 320,000 housing units for the whole of West Malaysia. As far as the backlog for rural housing is concerned, no figure can be given due to the inadequacy of statistical date. If a twenty year period is given to work out the present backlog in housing, it will be necessary to build about 16,000 units annually.[7] For Penang the estimated urban population (1962) is 433,000. If one assumes that about 60% of the population is inadequately housed, then the backlog of urban housing is 43,300 units.

An immediate target to construct 20,000 units annually has been set and it is intended to gradually increase this to 50,000 units which will not only meet the population increase but theoretically take care of the existing backlog.

The target figires of 20,000 and 50,000 set can be further subdivided into urban and rural housing targets for the states of West Malaysia based on the degree of urbanization (Table 6)

The degree of urbanization for West Malaysia as a whole is estimated to be 42.5% (Table 4). For the proposed target of 20,000 low cost housing units to be constructed annually, 8,800 will be urban housing units while the remaining 11,200 units are made up of rural housing...

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[7] Federal Department of Town and Country Planning, Memorandum on interim proposals for national, regional and state public housing targets, p. 1 - 2.

units. Later when the target is increased to 50,000 units, it will be divided into 22,000 urban and 28,000 rural housing units.

For the state of Penang, in the proposed national target of 20,000, her share comes to 1,680 units annually. Because of the high degree of urbanization in the state (64.1%) urban housing units form a bigger proportion of the target than rural housing units - 1080 urban units as against 600 rural housing units. In the national annual programme of 50,000 units, the target for Penang increases to 2,690 urban and 1,510 rural housing units making a total of 4,200 units annually.

Table 7 attempts to give a picture of the size of the housing problem through a twenty year plan period from 1965 to 1985, divided into four five-year plans. In the First Malaysian Plan 1965 - 70 it is estimated that the population of Malaya will probably increase by approximately 1.9 million. Assuming a standard of 6 persons per house this equates to a total need of 3,7,000 urban and rural housing units. If the Government is to be responsible for 60% of this housing burden then 190,000 units will have to be constructed over this five year plan period or an average of 38,000 units a year. When the present backlog programme of 16,000 units a year is added to urban need, a total of 270,000 new units will have to be built during the First Malaysian Plan. In the Second Malaysian Plan this total is expected to increase to 290,000 and by the Fourth Malaysian Plan 1980 - 85 a target of 400,000 is envisaged.

The estimated cost of constructing 270,000 units for the First Malaysian Plan 1965 - 70 is in the region of $1,517.70 million.[8] It is calculated that an area of 15,750 acres is needed for the 175,000 units of urban housing at a cost of $435.75 million while the cost of the structure of the dwelling units would come up up to about $682 million. The 95,000 units of rural housing would take up another 22,800 acres of land costing $91.2. The cost of the structure of the dwelling units is estimated to be $308.75 million. (See Table 8).

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[8] The Federal Department of Town and Country Planning, Housing (Peninsula States only) - A statement of the goals, targets or objectives for the period 1966 - 70.

TABLE 4

POPULATION FIGURES : THE STATES OF MALAYA

	Estimated Population 1962	Estimated Annual Population Increase 1957-62	Estimated Population Increase 1961/62	Percentage of Total Increase 1961/62	Degree of Urbanization **
Selangor	1,276,000	5.2%	66,500	23.0	60.4%
Negri Sembilan	445,000	4.4%	19,500	6.7	32.8%
Perlis	109,000	4.0%	4,500	1.6	9.5%
Penang	675,000	3.6%	24,500	8.4	64.1%
Perak	1,441,000	3.6%	52,000	18.0	49.2%
Kedah	832,000	3.7%	31,000	10.6	23.2%
Johore	1,089,000	3.5%	38,000	13.1	40.8%
Pahang	371,000	3.6%	13,500	4.6	40.8%
Trengganu	331,000	3.7%	12,500	4.3	33.5%
Malacca	338,000	3.2%	10,000	3.5	29.0%
Kelantan	584,000	3.1%	18,000	6.2	22.7%
Malaya	7,491,000	3.9%	290,000*	100.0	42.5%

* the estimated increase for 1964 is 300,000.

** based on settlements of 1,000 population and above.

Source: Federal Department of Town and Country Planning, Memorandum on interim proposals for national, regional and state housing targets.

TABLE 5

ESTIMATED EXISTING BACKLOG IN URBAN HOUSING - STATES OF MALAYA

	Estimated Urban Population 1962*	Percentage Total Urban Population of Malaya 1962**	Estimated Backlog of Urban Housing 1962
Selangor	77,000	24.1	77,100
Negri Sembilan	146,000	4.5	14,600
Perlis	10,000	0.4	1,000
Penang	433,000	13.6	43,300
Perak	709,000	22.2	70,900
Kedah	193,000	6.0	19,300
Johore	444,000	13.9	44,400
Pahang	152,00	4.8	15,200
Trenggamu	111,000	3.4	11,200
Malacca	98,000	3.0	9,800
Kelantan	133,000	4.1	13,300
Malaya	3,200,000	100.0	320,000

* based on 1957 census figures for urbanization. Actual figures for Malaya 1964 estimated to be above 50%.

** based on settlements of 1,000 population and above.

Source: Federal Department of Town and Country Planning, Memorandum on interim proposals for nationa, regional and state public housing targets.

TABLE 6

PROPOSED LOW COST PUBLIC HOUSING TARGETS:
STATES OF MALAYA

	Annual Programme of 20,000 Units			Annual Programme of 50,000 units		
	Total	Urban	Rural	Total	Urban	Rural
Selangor	4,600	2,780	1,820	11,500	6,940	4,560
Negri Sembilan	1,340	440	900	3,350	1,100	2,250
Perlis	320	30	290	800	80	720
Penang	1,680	1,080	600	4,200	2,690	1,510
Perak	3,600	1,770	1,830	9,000	4,430	4,570
Kedah	2,120	490	1,630	5,300	1,230	4,070
Johore	2,620	1,070	1,550	6,550	2,670	3,880
Pahang	920	370	550	2,300	940	1,360
Trengganu	860	290	570	2,150	720	1,430
Malacca	700	200	500	1,750	500	1,250
Kelantan	1,240	280	960	3,100	700	2,400
Malaya	20,000	8,800	11,200	50,000	22,000	28,000

Source: Federal Department of Town and Country Planning, Memorandum on Interim Proposals for national, regional and state public housing targets.

TABLE 7

THE SIZE OF THE PROBLEM (PENINSULA STATES)

Acknowledging that a 20 year period is required to work off the present backlog in housing (i.e. 4 x 5 year plans with 30,000 units in each plan) we have the following picture.

Plan Period (1)	Estimated Increase In Population (Million) (2)	No. of Housing Units Required To Meet Population Growth at 6 Persons per unit (3)	Government Aided Housing Equivalent To 60% of Column(3) Dwelling Units (4)	Units of Government Aided Housing *		Add Backlog Programme at 16,000 Units a Year to Urban Need. Total Urban Need- Units (7)	Total Government Housing Programme Units (5) + (7)
				Rural (Settlements 1,000 Population and less) (5)	Urban (6)		
First Malaysian Plan 1965 - 70	1.9	317,000	190,000	95,000	95,000	175,000	270,000 or approx. 54,000 units/annum
Second Malaysian Plan 1970 - 75	2.1	350,000	210,000	-	-	-	290,000
Third Malaysian Plan 1975 - 80	2.6	433,000	260,000	-	-	-	340,000
Fourth Malaysian Plan 1980 - 85	3.2	533,000	320,000	-	-	-	400,000

*In 1957 42.5% of the population lived in settlements of 1,000 population and above. It is assumed that this figure has arisen to 50% for the purposes of estimates for the First Malaysian Plan.

Source: The Federal Department of Town Country Planning - Housing (Peninsula States only) - A statement of the goals, targets or objectives for the period 1966 - 1970.

TABLE 8

ESTIMATES OF COST OF GOVERNMENT HOUSING PROGRAMME
(FIRST MALAYSIAN PLAN)

Types of Housing	Population Housed	Area of Land Needed Acres	Cost of Land	Cost of Structure	Total Cost
Urban	1,050,000*	15,750	435.75	682.00	1,117.75
Rural	570,000	22,800	91.2	308.75	339.95
TOTAL	1,620,000	38,550	526.95	990.75	1,517.70

*includes 480,000 of the 1.92 million inadequately housed i.e. backlog.

Source: Housing (Peninsula States only)
A statement of the goals, targets or objectives for the period 1966 - 1970.

CHAPTER III

HOUSING ADMINISTRATION, POLICY AND STANDARDS

Organization

The Federal Government's efforts to undertake some sort of housing for the general public only started in 1951 with the creation of the Housing Trust which was provided with a capital of $9.5 million.[1] However, this was used mainly for middle and lower middle cost houses and housing development was mainly undertaken on a piece meal basis. It was only after 1955 that an effort was made to introduce low cost housing for the lower income groups under the direction of the Ministry of Interior. In the first Five-Year plan funds were channelled through the Housing Trust to the various state governments. Though constitutionally housing comes under the jurisdiction of the state, in practice the states played a very passive role, only providing the land while the Housing Trust assumed the responsibility for the awarding and supervision of contracts and in cases where on the completion of a scheme if there were no financially autonomous authority available to administer it, the Trust would take over and administer it.

However, in the Second Five-Year Malayan plan the approach was changed because firstly under the Constitution a state government can only borrow from the federal government and therefore could not enter into a loan agreement with the Trust. It was felt that under the existing set up the state could not appreciate its responsibility in connection with housing and as a result were not always prepared to give their full co-operation. It was then decided that the state governments should take a more direct role in the work involved.[2] As a result $45 million was set aside specially for housing in the Second Five Year plan allocation of funds would be made only in response to requests from state governments and the funds so allocated would be loaned directly to the state government concerned. The state now becomes responsible for initiating, planning and financing housing schemes with the aid of financial loans as well as the selection of tenders, the location of sites and the administration of the scheme after completion.

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[1] As a result of a report on housing made to the Federation Government in 1949, it was decided to set up an organization capable of building houses and developing sites for sale. Subsequently the Housing Trust was established as a statutory body in 1950 and a sum of $9.5 million was allocated for the purposes of buying and developing land and building houses for cash sale. Under present set up the Housing Trust exists as the Federal Government's agents and advisers on low cost housing.

[2] Housing Trust, Federation of Malaya, Low Cost Housing Policy (Draft), p. 1.

Under the existing set-up state governments and municipalities can finance their own housing schemes if they have the resources, but usually they have to resort to federal loans which impose certain conditions. They are required to provide land, roads, drains, water supply and other facilities at their own cost. Together with the loans the Federal Government also provides the technical services of the Housing Trust which not only designs the housing schemes but also assists the State Government and municipalities in site investigations and other preliminary work, in the preparation of tender documents and supervising the construction. However, the responsibility for the final selection of tenders rests with the state or municipal authorities though the Trust can be consulted on technical matters. In the case of the City Council of Georgetown and the Federal Capital, the services of the Housing Trust are waived because they are in a position to utilise their own technical services. In the case of state governments when it comes to the construction of roads, street lighting, drains and other services, it has to use its own technical officers in the relevant departments.

In view of the several authorities responsible for housing schemes, namely, the Ministry of Local Government and Housing, the Federal Treasury with whom the states enter into agreement for loan funds, the State Government and departments like the Public Works Department and the Housing Trust, it is not surprising to find that implementation of low cost housing schemes are sometimes delayed, owing to the lack of proper coordination. Since housing is a joint effort of so many departments, there is a need for greater coordination if efficient low cost housing development is desired and in the light of the present organizational set-up the argument for the establishment of a single housing authority responsible for the whole process of low cost housing development assumes increasing importance.

Policy and Practice

To enable the Federal and State Governments to deal with low cost housing development the Federal Government would be responsible for the provision of loan funds under the control of the Ministry of Local Government and Housing. For low cost houses on hire purchase terms loan funds are provided at 2% interest repayable over seventeen years with the condition that monthly repayments should not exceed $35/- per month. In the case of flats for rental the interest on federal loans is at 5% per annum with the repayment period of not more than 60 years. Rents are not to exceed $50/- per month. The rents are generally worked out as follows:-

$30/- per month for one room

$40/- per month for two rooms

$50/- per month for three rooms

Under existing policy the State Governments would be responsible for the provision of land on nominal terms, the provision of subsidies for the preparation of site including roads, drainage, water and electrical main; and the administration of housing schemes on completion.[3]

[3] Housing Trust, Federation of Malaya, Annual Report 1964, p. 57.

The Federal Government would provide free technical services through the Housing Trust.

The government's intentinn as regards low cost housing is to promote hire purchase or rent purchase housing and rental housing among households with an income of less than $300/- per month and are financially unable to purchase or rent their houses without assistance from the government.

Hire purchase housing is defined as housing where the monthly rent paid by the tenant is recorded as a hire purchase installment. Unlike Singapore the tenant does not have to pay an initial purchase deposit but he becomes the owner of the house as soon as the cost of building and ancillary services is repaid. The policy is that the net monthly instalment to cover repayment of loan and interest must not exceed $35/- while fire insurance, rates and maintenance remains the responsibility of the tenant. Generally the monthly instalments for a two-room detached house vary from $20/- to $25/- while for brick terraced houses, it ranges from $30/- to $35/-. To keep within this limit of $35/- the total cost of a house, excluding land cost and inclusive of the 2% interest on the federal loan, should not exceed $5,000/-.[4]

Rental housing is defined as housing where the tenant is required to pay a monthly inclusive rent sufficient to recover repayment of loan, interest, fire insurance, rates, maintenance and administration. The inclusive monthly rent must not exceed $50/-, and loans are usually granted for periods of up to 30 years at subsidised interest rates of 3% to 5% per annum, which means that cost of building and services should not exceed $5,000 - $6,000. This policy was mainly confined to the construction of houses and flats in brick or concrete constructions in the inner urban areas. On full repayment of the loan the building was to become the property of the administrative authority and the rents accruing thereafter were to be used by the authorities for the construction of further low cost housing.

This was the original policy that was decided upon as far as repayment of loans and for the houses was concerned but in the First Malaysian plan 1966 - 1970 there was a slight shift in policy with emphasis placed upon a house owning democracy with a tendency towards fagouring hire purchase house ownership.

The Penang State government follows the policy set by the federal authorities as far as its low cost housing programme is concerned. All its housing schemes are on a hire purchase basis. However, the Georgetown City Council follows a different policy in that it favours renting rather than selling its low cost houses. Several reasons have...

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[4] Housing Trust, Federation of Malaya, Annual Report 1963, p. 8.

been given for this policy. In the first place land within the city limits has a high premium value. It is an asset of the City Council which cannot simply be given away or sold at a nominal price because of its very high value. Secondly, it is argued that by renting rather than letting, there can be better control exercised over the occupants especially in flats, to ensure that these places do not revert to slums again. It was pointed out also that in their previous residences, these people were only tenants who had to pay rents and thus it would not mean a loss on their part if the same arrangement is continued.[5]

Allocation of Low Cost Houses and Flats

Under the existing set-up, the Ministry provides loan funds while the Housing Trust is the technical adviser but state governments and municipalities are responsible for the management of housing estates as well as the allocation of the houses and flats. Generally an applicant for low cost housing has to comply with the following conditions.[6]

(i) the applicant is a federal citizen;

(ii) the applicant is 21 years of age and over;

(iii) applicant has been a continual resident within the town in which the housing scheme is erected;

(iv) the applicant's total family income inclusive of bonuses, gratuity and other sources of income does not exceed $300/- per month;

(v) the applicant, applicant's spouse or parents living with him do not own any land or buildings in the states of West Malaysia;

(vi) applicant is the principal wage earner of the family.

An applicant's income should not be the sole criterion for the determination of eligibility. Income limit may be used as a yardstick to measure a person's financial status in relation to low cost housing but his needs should also be considered, based on the number of persons in the family, their current accommodation, physical incapacity etc.. A family of 4 with a total monthly income of $300/- is certainly in a much better position than a family of 10 with a total monthly income of $350/-. Therefore allocation policy has to give sufficient weight to the size of a family as well as its financial position. A system of awarding points has been devised with the following as guide-lines: -[7]

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[5]Information obtained from personal interviews with City Council Officials.

[6]Housing Trust, Federation of Malaya, Annual Report 1963, p. 10.

[7]Public Housing in Malaysia, Ministry of Local Government and Housing, p. 8—9.

(a) applicants earning a total family income not exceeding $300/- per month will qualify for low cost dwellings irrespective of the size of the family;

(b) where the total family income exceeds $300/- per month but is not more than $350/- per month the size of the family must not be less than 7 persons. For an increment of every $50/- to family income there must be an addition to the size of the family by one until a family size of not less than 16 and a family income of not more than $800/- per month is reached;

(c) applicants earning a total family income exceeding $800/- per month will not qualify for a low cost house;

(d) the definition of a family will be as follows: -

(i) Head of a family;

(ii) his or her spouse;

(iii) his or her children including legally adopted children

(iv) parents and parents-in-law living with and dependent on the head of the family;

(v) unmarried brothers and sisters living with and fully dependent on the head of the family.

In the case of the City Council schemes all subsidised units which are built with federal loans are allocated according to the procedure laid down by the Ministry of Local Government and Housing. All units that are charged economic rental are allocated by ballot among eligible applicants.

If a housing scheme is part of a slum clearance programme or is a result of demolition, then prefereence will be given to the squatters and those who have been displaced in the allocation.[8]

Building Standards

Standards should be the housing goals toward which a nation strives and in this case the goal is the establishment of a decent home and suitable living environment for every family. The emphasis is on both homes and environment. No definition of a 'decent home' or 'a suitable living environment' has yet been established. It is very difficult to develop a general acceptable overall housing standard.....

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[8] See Chapter 4 for further details on City Council Schemes.

because different groups have different goals so that most so called housing standards today reflect minimum situations, that is, they reflect the level below which housing is considered to be unsafe or unsanitary, which does not necessarily represent a decent or desirable home.

In a country like Malaysia where there is a problem of housing shortage that has yet to be solved, housing standards should be a compromise reached between what is desirable and what is possible for one has to bear in mind the overall need for housing, the available finances and the ability of occupiers to pay for the accommodation. Compared to other Asian countries Malaysia has had very high average housing standards which should be reduced to that of a more realistic standard until such time as the present housing needs have been met and higher incomes permit higher standards of accommodation to be adopted. For those already in a position to pay for higher standards of accommodation their housing needs can be met by privately sponsored housing programmes. The subsequent Report on Minimum Standards for Low Cost Housing, 1964[9] did take this into consideration and as a result standards have been reduced since the publication of the Report.

(a) Space Standards

It must be borne in mind that one of the principle factors affecting the number of units which can be erected for a given budget is the 'space standards' which are adopted for the low cost unit. It is recommended that each unit be kept as small as possible commensurate with health considerations and the size of the families. To cut down construction and maintenance costs it should be simply planned with a lavatory, bathroom, balcony, kitchen space and a sleeping/living room with few or no permanent divisions.

How many square feet of floor space will each person require in such a unit? Space standards very considerably in all parts of the world.[10] In Hong Kong the minimum area per person is 25 square feet (3.25 square meters), in Japan it is 62 square feet (6.4 square meters), in Eastern Europe and parts of the Mediterranean it is around 8 square meters while in Western Europe it ranges from 12 to 17 square meters. In comparison, Malayan space standards seem to be among one of the highest. The Housing Trust Annual Report 1961 showed...

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[9] A Committee on Minimum Standards for Low Cost Housing was appointed in 1964 to produce standardised designs for low cost dwellings and to draw up norms for low cost dwellings bearing in mind the need for keeping costs to the minimum, speed of construction, climatic conditions and the type of dwelling suitable for Malaysia.

[10] See Appendix A.

TABLE 9

FLOOR AREAS IN LOW COST HOUSING UNITS

Types of Units	Timber Houses		Brick Terrace	Multi-Storey Flats (Average of Total Area of 1, 2, 3 Roomed Flats Taken as 1 Unit		
	Type TV3/1	Type TV3/2	Type L3/3	4 Storeys	12 Storeys	15 Storeys
			'Square Feet'			
Total Floor Area	608	643	708	549	638	662
Floor Area per person (6 persons per unit)	101.30	107.00	118.00	91.43	104.61	110.31

Compiled from Housing Trust, Federation of Malaya, Annual Report, 1961, p. 49.

that the floor area per person in their projects varied from 91.43 square feet (8.65 square meters) to 118.00 square feet (11.17 square meters).

These standards are certainly high for low cost houses and although from one angle they may be desirable, on the other hand they can only result in fewer housing units being constructed and such units, unless heavily subsidized, have to be let at higher rents than a great number of people in the lower income groups can afford.

According to a seminar on Minimum Standards of Accommodation in relation to levels of living held in the Philippines in 1963, 50-52 square feet (about 5 square meters) was recommended as the minimum space requirements per person which would include all functional space such as dining, w.c., bath etc. It was also agreed that 350 square feet (33.13 square meters) should be the minimum functional area for a complete housing unit for a family of not more than 6 persons. For every additional 50 square feet up to 8 - 9 persons and beyond this 40 square feet per person.[11]

In Malaya after publication of the Report on Minimum Standards for low cost housing, the minimum habitable area for flats has been reduced as follows: -

3 room flat - 450 square feet (at 50 square feet per person)

2 room flat - 300 square feet (at 50 square feet per person)

1 room flat - 150 square feet (at 50 square feet per person)[12]

(b) Community Facilities

The usual procedure in low cost housing schemes is to obtain a plot of land and erect on it as many dwelling units as circumstances will allow. Shops are often incorporated into the ground floor of blocks of flats but so far in nearly all the housing schemes, little attention has been paid to the provision of public open space and other essential such as schools which are considered to be the responsibility of other departments or agencies.

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[11] Federal Department of Town and Country Planning, Memorandum on the Construction of Low Cost Housing in Malaysia with special reference to the Greater Kuala Lumpur Region.

[12] Report on Minimum Standards for Low Cost Housing, Ministry of Local Government and Housing, p. 2.

In the Report on Minimum Standards[13] the following community facilities have been recommended.

(i) Schools

One and half acres of land be set aside for a primary school in a community of 1,000 persons.(This assumes 150 children of primary school going age).

(ii) Shops

Six shops measuring approximately 7,200 square feet to be provided for a community of 1,000 persons.

(iii) Open Space

A children's play ground of between ½ to 1 acre to be provided for a community of 1,000 persons.

(iv) A Community Centre measuring approximately 2,000 square feet should be provided for a community of 1,000 persons.

(v) Clinic

This should be incorporated in the shopping provision.

(vi) Parking for 1,000 Persons

Cars: 56 spaces at 250 square feet per space (14,000 square feet).

(vii) Funeral Parlour

There should be at least one funeral parlour in each housing estate.

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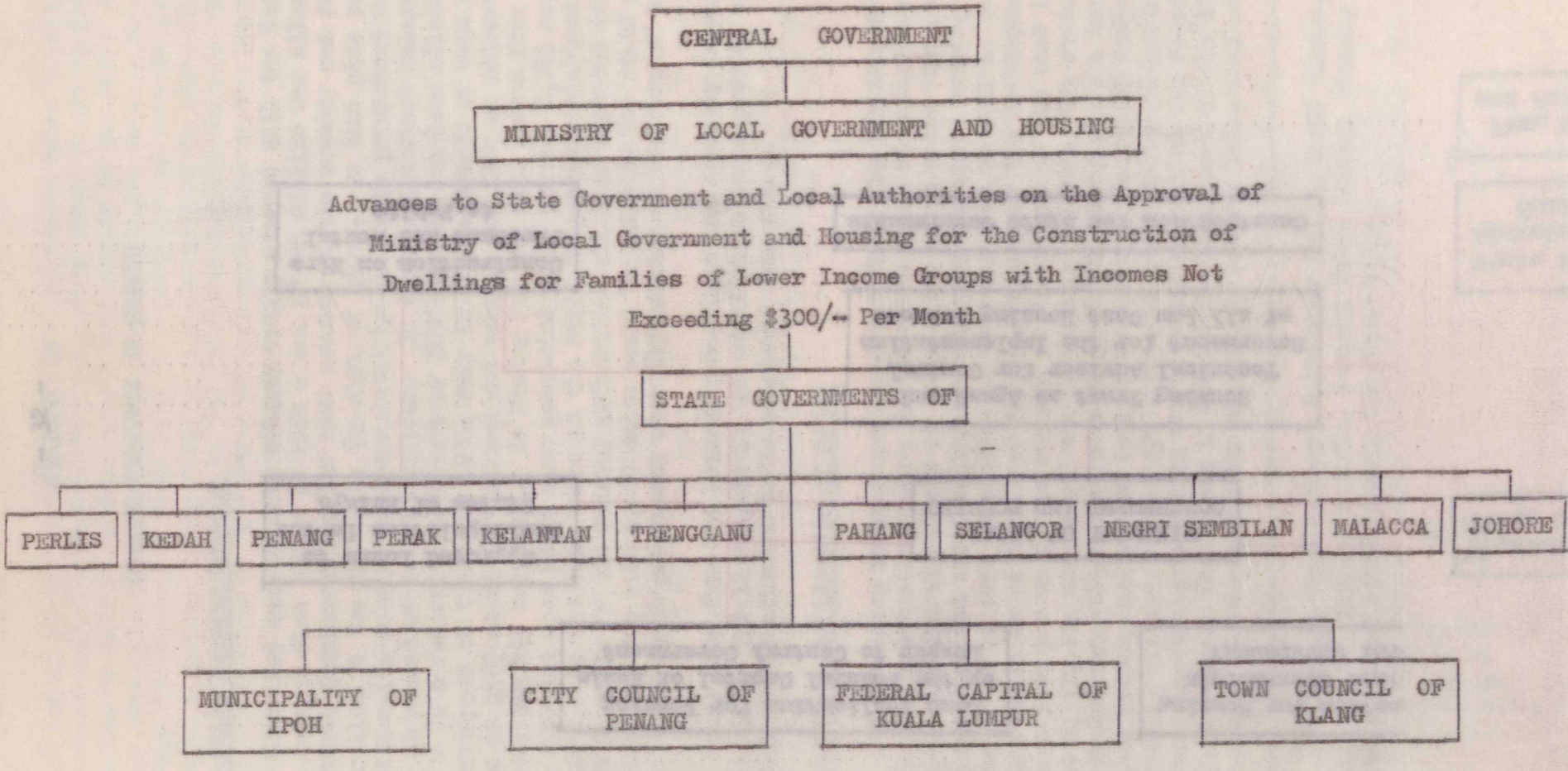
[13] Report on Minimum Standards for Low Cost Housing, Ministry of Local Government and Housing, p. 2.

DIAGRAM 1

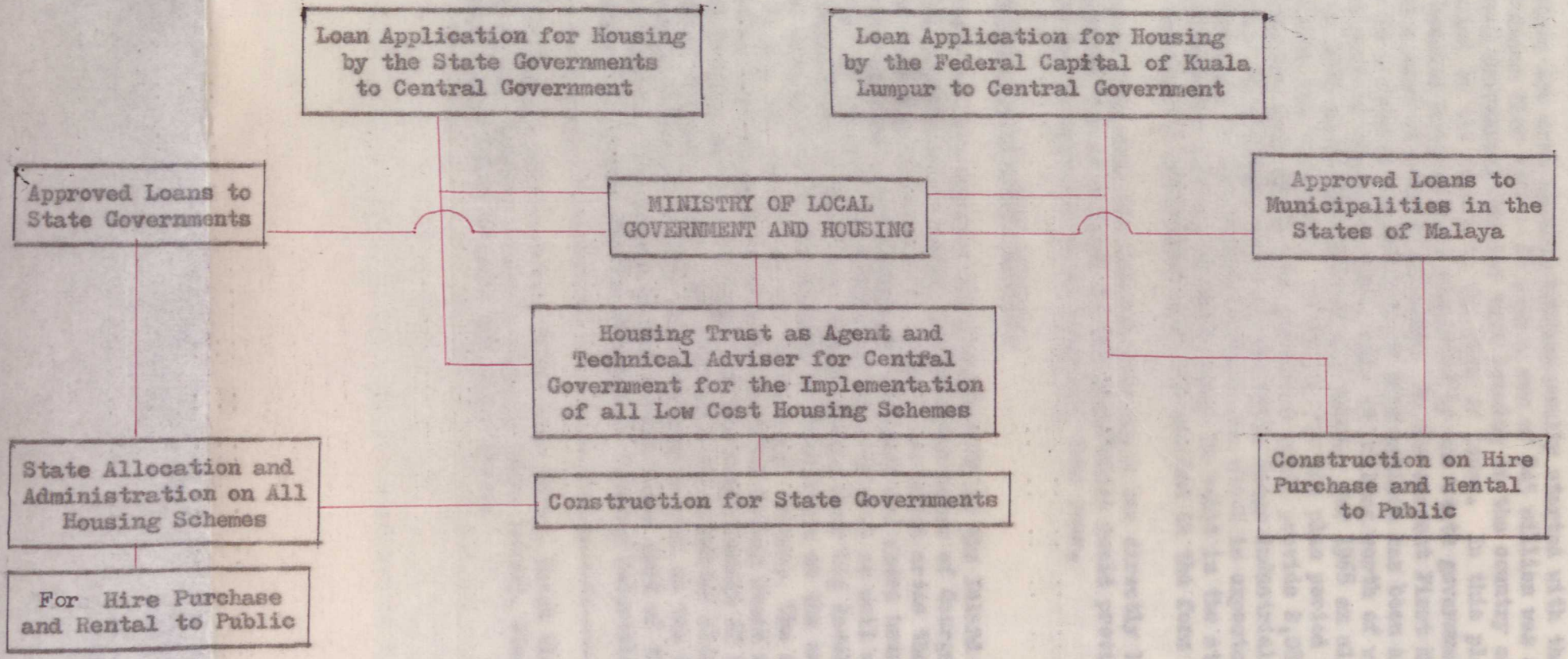
FLOW OF GOVERNMENT FUNDS FOR LOW COST HOUSING CONSTRUCTION



Source: Housing Trust, Annual Report 1964, p. 53.

DIAGRAM 2

CHART SHOWING IMPLEMENTATION OF LOW COST HOUSING SCHEMES IN THE STATES OF MALAYA FOR 1964



Source: Housing Trust, Malaysia.

CHAPTER IV

HOUSING PROJECTS IN PENANG

Federal - State Housing Schemes

State low cost housing schemes really started with the Second Five Year Malayan Plan 1961 - 66 when a sum of $45 million was allocated by the Central Government for low cost housing in the country and funds were channelled to the states in the form of loans. In this plan period 7 low cost housing schemes were completed by the state government totaling 589 units at a cost of over $3 million. In the current First Malaysian Plan 1966 - 70 a federal expenditure of $150 million has been allocated. In the first year of the plan, 1966, only $5 million worth of work was done while in 1967 about $17 million was spent. For 1968 an allocation of $40.5 million has been made. In Penang for the plan period five schemes have been embarked upon which when completed would provide 2,083 more housing units. In addition there is the Rifle Range industrialised scheme undertaken directly by the federal authorities which is expected to yield 3735 units. Altogether over 6,000 units would be built in the state and would cost the Federal government over $35 million in the form of loans.

Apart from this the Federal government has directly launched a 'crash programme' for 12 schemes in the state[1] which would provide a total of 492 units and is expected to be completed this year.

Types of Schemes and Location of Sites

State housing schemes are located both on the Island and the mainland with concentration mainly in the urban areas of Georgetown, Bukit Mertajam and Butterworth because it is in these urban areas that population concentration and overcrowding are dominant and where housing needs are greatest. To relieve congestion in the city area as well as to improve the living conditions of the lower income groups many big development schemes have been put up in the suburbs of Georgetown as the ones in Ayer Itam Phase I, II, III and IV and the Rifle Range schemes. The state has also undertaken resettlement schemes as in Telok Bahang where a total of 145 detached housing units were built for the resettlement of fishermen in that fishing village. There are also slum and squatter clearance schemes found particularly within the City limits such as the Noordin Street Ghaut scheme. The scheme in Mak Mandin forms part of the industrialization programme in Penang for the purpose of housing industrial workers.

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[1] At Penaga, Kepala Batas, Telok Ayer Tawar, Tasek Glugor, Sungei Dua, Kubang Semang, Kampong Berapit, Kampong Bahru (Alwa), Simpang Ampat, Kampong Gurun, Jalan Bukit Panchor and Bayan Lepas.

As far as it is possible the state government tries to site the schemes in areas where the demand is greatest and tries to put up different housing schemes to conform to the general development of the area. Since the state is responsible for the provision of landin all housing schemes either through alienation of state land or acquisition of private land, there has been a general inclination to site the schemes on state land because acquisition payments add to the total cost of the scheme. Thus one of the determinants of the siting of housing schemes is the location of state land suitable for housing development.

Size and Density of the Schemes

Active state participation in low cost housing started as late as in 1961 and as a beginning very small schemes were undertaken. The Kampong Herriot scheme consisted of only 35 units sited on an area of 1.08 acres. The latter schemes gradually increased in size to over 100 units e.g. Telok Bahang (145 units) Ayer Itam Phase I (100 units), Phase II (124 units).

In the First Malaysian Plan the housing programme was intensified and the schemes were greatly increased in size in terms of numbers built. Out of the six schemes under construction the smallest is Mak Mandin consisting of 3 blocks of 4 storey flats totaling 240 units and the largest to date is the Rifle Range scheme of 6 blocks of 17 storey and 3 blocks of 18 storey flats totaling 3,735 units. The increase in the size of the schemes in the First Malaysian Plan as compared to the schemes in the Second Five Year Malaysian Plan was due to the fact that in the former attention was centred on the construction of flats rather than detached and terrace housing.

As far as housing density is concerned the first seven schemes showed very low densities per acre. In the Kampong Berapit Phase I and II which consisted of detached rural type of housing the density was only 9.5 units per acre. The Telok Bahang scheme, which is also a detached housing scheme, has a density of 12 units per acre. In the case of terrace housing the density increases. In Ayer Itam Phase I and II of brick terrace houses the housing density is 196 units per acre.

Flats have much higher densities. For Ayer Itam, Phase III scheme, which consists of one block of sixteen storey flats, the density is 397 flats per acre and an average population density of 2,382 persons per acre. The Noordin Street Ghaut Scheme of one block of seven storey flats situated in the centre of the city, has a housing density of 337 units and a population density of 2,022 persons per acre. The Mak Mandin scheme has a relatively lower density of 80 units per acre.

Financing of the Schemes

All state housing schemes are financed with the aid of loans from the Federal Treasury at an interest rate of 2% per annum repayable over a period of 20 years. The fact that the Federal Government usually has to borrow this fund at a rate of 5% means that in all the schemes there is a hidden subsidy borne by the Federal Government in the form....

of the 3% difference. However, there is a stipulation that the loan can only be used for construction purposes so that there is a limit placed on the amount that can be borrowed.

The state government does its part by providing the land for all low cost housing schemes. So far all the schemes have been on state land with the exception of Kampong Herriot where the land was acquired at $1.50 per square foot but it was a very small scheme involving only 35 units on an area of 1.08 acres. The state also has to provide for auxillary services such as roads, water supply, electricity etc. which comes in the form of a state subsidy.

Diagram 3 shows the amount of Federal expenditure (in the form of loans) and state expenditure (in the form of state subsidies) for low cost housing schemes from 1961 to 1967. For the first seven schemes in the Second Five Year Malayan Plan Federal loans amounted to $2,247,337 while the amount of state subsidy was $811,433. For the period of the First Malaysian Plan six schemes have been approved and are currently under construction. The amount of federal loans for all these 6 schemes would come up to over $35 million. From the diagram, for the seven year period from 1961 to 1967 the government had spent over $13 million in low cost housing in Penang, $11,762031 in the form of loans and $1,482,432 by the state government in the form of a state subsidy.

Method of Purchase and Repayment

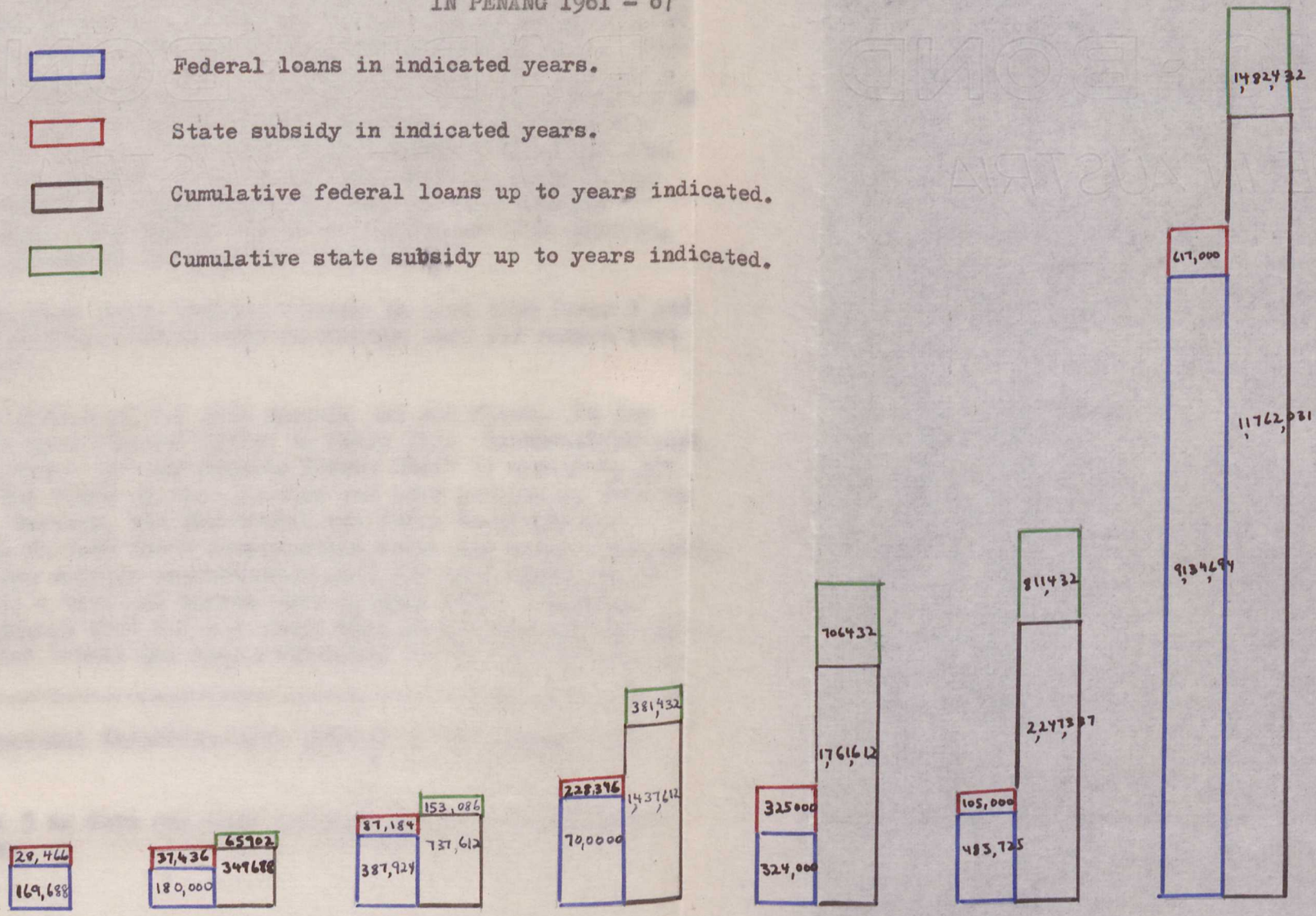
The state government follows the general policy laid down by the federal authorities which lays stress on home ownership and thus there is no question of rentals in any of the state schemes. All units are ultimately to be sold on a monthly instalment basis. The authorities do make some allowances where a unit may be rented out for a year or two to give the tenant sufficient time to decide on whether he would like to stay on permanently.

The monthly payment depends on the cost of construction of the dwelling unit but as far as possible they try to keep it below the $35/- per month mark. In the first seven schemes for the period 1961 to 1966 all the monthly instalments to be paid were less than $35/- (refer Table 10). Figures of monthly instalments for flats are not available because all the schemes involved are still under construction. The monthly instalments charged so far seem reasonable and within the paying capacity of those for whom it is suppose to house because there have been no complaints of tenants not being able to pay or falling into arrears with the exception of the Telok Bahang scheme where many tenants have not been able to keep up their monthly payments not because the amount charged is too high but because of the slump that has hit the fishing village and where many of the fishermen are now unemployed.

In the purchase of low cost houses no down payments or deposits are required so as to make home ownership as easy as possible. Before 1966 land was given as a grant for a nominal sum. After 1966 there was a change in policy where land was no longer alienated but leased out.....

DIAGRAM 3

GOVERNMENT EXPENDITURE FOR LOW COST HOUSING SCHEMES (STATE)
IN PENANG 1961 - 67



Compiled from figures given by Penang state Secretariate.

usually for a period of 99 years. The land premium to be paid is calculated as ½% of ½ of the market value of the land multiplied by 99 years. This is not collected in a lump sum but is paid in instalments after payment for the house is completed.[2]

When the state sells to the purchasers on an instalment basis it also charges the same 2% interest rate that it has to pay but the repayment period is 17 years. The three year differnece is a time allowance given for actual construction work when no income would be forthcoming.

Construction Costs

Construction costs for state low cost houses in Penang are comparable to those in the other large urban centres of West Malaysia.[3] There are only three detached timber housing schemes - at Kampong Berapit Phase I and II and at Telok Bahang (Refer to Table 10 and Table 11 for list of schemes and other data). Cost per unit of a detached timber unit in Kampong Berapit is about $3,000 while in the Telok Bahang Scheme it is $2,250 per unit. This lower cost is because of the smaller floor area of 330 square feet as compared to 640 square feet for Kampong Berapit. However, in terms of cost per square foot the Telok Bahang Scheme returns a very high figure of $6.81 while cost per square foot in Kampong Berapit is around $5.00. This is because the Telok Bahang Scheme is on low lying land near the sea which necessitated considerable earth filling and site development. After work started it was found that wind velocity at the site could reach a maximum of eighty miles per hour so that special features had to be added. The houses had to be reinforced with gussets, steel plates etc. to withstand the high wind velocity.

The four terraced brick housing schemes in Ayer Itam Phase I and II, Kampong Herriot and Bagan Jermal show an average cost per square foot of between $6/- to $7/-.

The schemes scheduled for 1966 onwards are all flats. So far work on 4 schemes have been started (Refer to Table 11). Construction cost per unit in Ayer Itam Phase III and Noordin Street Ghaut is around $4,300 which is the average for flats in this country and cost per square foot is approximately $11/-. However, the Mak Mandin and Rifle Range schemes prove to be exceptions in that their construction costs are extra-oridinarily high. In Mak Mandin the average construction cost per unit inclusive of piling is $5,000 giving a cost per square foot of over $13/-. Normally the average cost per square foot for a 4 story flat is between $6/- to $7/-. This high figure for Mak Mandin has been attributed to the high piling....

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[2] Based on Personal interview with official of the Penang Land Office.

[3] See Chapter 5 on Cost and Land use analysis for the different types of housing units.

TABLE 10

STATE LOW COST HOUSING SCHEMES 1961 - 1966

Name of Scheme and Location	Type	No. of Units	Total Costs $	Loan $	Subsidy $	Cost Per Unit $	Cost Per Sq. Ft. $	Density Per Acre		Monthly Instalments $	Total Floor Area Sq. Ft.
								Housing Density (Units)	Population Density		
1) Kampong Berapit Ph.I Bk. Mertajam	TV 3/2 HT 1289 Detached timber houses - 2 room	54	198,154	169,688	28,466	3,142	4.90	9.5	57	26.00	640
2) Kampong Herriot Penang	L 4/8 HT 1427 Double Storey terraced houses	35	217,436	180,000	37,436	4,286 Middle houses 4,661 end houses	6.01 6.53	32	192	32.50 middle 34.50 end	713
3) Bagan Jermal Phase I Butterworth	L 3/3 HT 1131 Single storey terraced houses two bedroom	81	475,108	387,924	87,184	4,630 Middle houses 3,930 end hses.	6.17	-	-	31.00 middle 34.50 end	750
4) Ayer Itam Phase I	Double storey terraced houses Two bedroom	100	605,921	500,000	105,921	4,410.75 Middle 4,910.75 end houses	6.18 6.88	196	1,176	31.00 middle 34.50 end	713
5) Kampong Berapit Phase II	TB 4/2 HT 1691 Detached timber houses - 2 room	50	322,424	200,000	122,424	3,532	5.50	9.5	57	26.00	640
6) Telok Bahang Phase II	TN 2/1 HT 1684 Detached timber houses - 1 room	145	649,000	324,000	325,000	2,250	6.81	12	72	15.50	330
7) Ayer Itam Phase II	L 4/2 HT 1823 Double storey terraced houses	124	590,725	485,725	105,000	4,396 4,732	6.16	196	1,176	22.00 23.50	713

Total No. of Units built = 589
Loan $ 2,247,337)
Subsidy $ 11,433) $ 3,058,770

Compiled from data obtained from Penang State Secretariate

TABLE 11

FIVE STATE-FEDERAL HOUSING SCHEMES (1966 - 70)

Scheme	Type of Flats	No. of Units	Total Cost of Construction $	Building Cost $	Piling Cost $	Average Cost Per Unit $	Cost Per Sq. Ft. $	Loan (from Federal Treasury) $	Total Cost of Services (State Subsidy) $	Density Per Acre		Total Floor Area Sq. Ft.
										Flats	Persons	
1) Ayer Itam Phase III	1 block of 16 storey flats	533	2,243,780	1,865,998	377,782	4,340	11.42	2,307,000	45,000	397	2,363	380
2) Noordin St. Ghaut	1 block of 7 storey flats	397	1,738,982	1,432,179	306,803	4,370	11.50	1,874,000	96,000	337	2,022	380
3) Mak Mandin	3 blocks of 4 storey flats	240	1,328,605	934,173	394,432	4,997	13.15	1,006,000	240,000	80	480	380
4) Rifle Range (Federal Scheme)	6 blocks of 17 storey and 3 blocks of 18 storey flats	3,735	19,316,000	17,316,000	2,000,000	5,220	13,05	24,409,230	-	281	1,686	400
5) Chain Ferry Road*	7 blocks of 4 storey flats	672	2,607,770	-	-	3,880	10.21	2,607,770	-	-	-	380
6) Ayer Itam Phase IV	1 block of 16 storey flats	448	2,150,000	-	496,948	4,799 (two rooms)	12.63	2,150,000	-	-	-	380
						3,000 (three rooms)	6.00		-	-	-	500

*Work on scheme has not started yet. Figures are based on estimates. The others are from tender figures.

Total number of units = 5,909
Total construction costs = $ 29,385,137

Compiled from data supplied by Ministry of Local Government and Housing and the Housing Trust.

cost which came up to nearly 1/3 of total construction cost. The scheme is sited on very soft ground with the result that deep piling was necessary. From preliminary soil investigations conducted by the Public Works Department, it was originally estimated that piling would be to a depth of sixty to eighty feet. On this basis the estimate worked out for total construction cost of the scheme was $1,006,000 but when actual works commenced piling went down to 150 feet so that final construction cost came up to $1,300,000, an increase of about $300,000.

The Mak Mandin Scheme can be considered to be an uneconomical one from the point of view of construction costs and according to the definition of low cost housing as given by the Federal government it is observed that this Scheme no longer falls within the category of low cost. Since a two room flat should cost about $4,000. Even when piling cost is excluded, the average building cost per square foot is still high as compared to the Ayer Itam Phase III and Noordin Street Ghaut Schemes for in Mak Mandin it is $10.24 per square foot while it is about $9.40 for the other two Schemes.

The construction costs in the Rifle Range Scheme has significant bearings as it is a pilot Scheme using the industrialised method of construction which is supposed to cut down costs. The contract has been awarded to the firm, Hochtief - Chee Seng, which is a joint venture set up by a German company and a local contracting firm. The factory producing the elements for the flats is located just a short distance from the site and when working to full capacity is capable of producing 110 elements which is sufficient to erect 8 units a day. At present the factory is working to complete six units a day based on a 10 hour day. Only the shell or super structure of the buildings are prefabricated while the internal fittings are done by the traditional method. It is estimated that the production of the elements and fixing into position of the superstructure take up 60% of total building costs.[4] The cost of building six blocks of seventeen storeys and three blocks of eighteen storeys is calculated to be over $17 million while $2 million was set aside for piling, giving a total construction cost of over $19 million. Calculated on this basis, the average construction cost per unit comes up to £5,220 while the cost per square foot is $13.05. This is a very high cost figure indeed when considering that over 3,000 units are only two room units which should fall into the $4,000 per unit category.[5] When actual construction work started it was found that construction per unit as well as per square foot would well go beyond the estimated figure given above as total construction cost was going to be in excess of $19 million.

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[4]Based on personal interview.

[5]See definition of low cost housing.

PLATE 5. LOW COST TERRACE BRICK HOUSES IN RIFLE RANGE

PLATE 6. KAMPONG HERRIOT BRICK TERRACE HOUSING

PLATE 7. AYER ITAM PHASE I (TERRACE)

PLATE 8. SIXTEEN STOREY FLATS
AYER ITAM PHASE IV (TRADITIONAL METHOD OF CONSTRUCTION)

PLATE 9. VIEW OF THE HOCHTIEF - CHEE SENG FACTORY IN RIFLE RANGE

PLATE 10. THE INDUSTRIALISED HOUSING SCHEME IN RIFLE RANGE (FEDERAL)

On the basis of construction cost in the Rifle Range scheme the prefabricated technique does not seem to offer any advantage over the traditional method. In fact, it is a much more expensive method when compared with construction costs in the Ayer Itam Phase III and Noordin Street Ghaut Schemes using the traditional method where average cost per unit is only about $4,000.

It has been argued that this apparently high cost figure is due to the high piling cost which is a consequence of the nature of the land and not of the method of construction used. The building cost of $17 million remains fixed inspite of the increase in piling costs. If piling cost is excluded from construction cost, then the average cost per square foot is lowered considerably to $12 million. However, even if this figure is uded, when compared to the Ayer Itam Phase III and Noordin Street Ghaut scheme of $9 per square foot (exclusive of piling cost) it is still high. As far as the prefabricated method is concerned there is not much saving in costs. The materials used in the traditional type of construction such as bricks and clay; are not suitable for the production of prefabricated units as these materials are not easily worked and are too coarse or brittle. The materials that are used such as steel and concrete add greatly to the material costs. In addition there is not much reduction in labour costs in the prefabricated scheme in Rifle Range from the point of view of number of workers employed on the scheme. The number of workers needed both to produce the elements in the factory and to erect it on the site at the rate of six units a day is 200. In the traditional method about the same number of workers is needed to construct a similar block as in the Rifle Range scheme.

Georgetown City Council Housing Schemes

The City Council first launched its public housing scheme in 1954 in the Green Lane area but this first attempt could not be looked upon as low cost housing because the cost per unit was rather high, in the region of over $6,000. Since then it has steadily provided more and more housing units within the city limits, all of them within the category of low cost housing with the possible exception of the Trengganu Road Scheme which has been criticisdd as being too expensive in terms of construction costs and rents charged, to be termed low cost.

The housing projects of the City Council are financed either from its own funds or with the aid of loans from the Federal Government. As most of the housing schemes undertaken by the City Council are on a very small scale, the City Council has found it within its capacity to finance the bulk of its schemes such as the ones in Thean Teik Road and Campbell Street (People's Court). Three schemes which were on a considerably larger scale were financed with the aid of loans. These were the Kampong Selut scheme (222 units) and Trengganu Road Schemes (483 units) which were constructed with Federal loans of $860,000 and $2,600,000 respectively. The Rifle Range scheme was erected in 1956 with a Housing Trust loan of $560,000 (Refer to Table 12).

The policy of the City Council as far as the provision of houses is concerned is firstly, to rehouse families whose houses were demolished as a result of its slum clearance and city development programme and secondly, to help reduce the housing shortage as well as to provide houses for the poor at reasonable rents.[6]

The City Council has so far undertaken 11 schemes[7] which can be categorised into two distinct types - subsidised and non-subsidised units. From an examination of the conditions for eligibility, it can be seen that subsidised units are meant for those who have been displaced as a result of slum clearance and city development (such as the widening of roads, or the provision of parking space and playgrounds) and for those who are in a very low income bracket. On the other hand the non subsidised units are the result of the City Council's efforts to ease the present housing shortage and normally cater for those within the income group of $250/- to $500/-.

The subsidised category of units are charged nominal rents, the exact amount depending upon the cost of each unit. The procedure for allocation of subsidised units follows that laid down by the Ministry, irrespective of whether they were built with federal loans or otherwise, simply for the sake of uniformity and ease of administration. The procedure is as follows:-[8]

(i) Allocation committees should first separate the eligible from the non-eligible applicants. All applicants with an aggregate family income of $300 per month and less are eligible.

(ii) Separate list of eligible applicants should then be drawn up for each community thus:- Malay, Chinese, Indian and others.

(iii) Each community will then be allotted a quota of houses in the scheme proportionate to the number of eligible applicants from that community.

(iv) The allocation committee may then short list the applicants in each community to exclude those who own property, those who are bachelors or spinsters or have very small families and those who do not live in the area where the housing scheme is situated etc.. Eligible applicants should have a family of at least 5 persons.

(v) Applicants on the short list of the particular community will then ballot for the quota of houses reserved for the community.

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[6] City Council of Georgetown, Public Housing - A Guide, p. 1.

[7] See Appendix B for map showing location of the schemes.

[8] City Council of Georgetown; Proposed policy and procedure, p. 3.

Subsidised Schemes

1. Ah Quee Street Phase I and II

Phase I consists of 12 units of flats and 6 shops, meant to house the squatters who lived in Prangin Ditch and had to be given alternative accommodation when the City Council demolished their shacks to make way for a parking place. The subsidised rent per month is $20/- while the shops are tendered to the highest bidders with rents ranging from $72/- to $120/-.

Phase II was started as a scheme to accommodate residents of Armenian Street/Acheen Street whose houses were demolished to provide a children's playground. The rent charged is $40/- per unit.

2. Brick Kiln Road Temporary Shophouses

A scheme of 10 units with a chargeable rent of $15/- per month per unit. This scheme is again for squatter resettlement.

3. Campbell Street or Peroples' Court consists of 115 units with 83 units of one and two room units and 21 shops. In the one room flats the rents charged per unit are from $24/- to $28/- with the rent decreasing as you go up a higher floor. The two room flats are further subdivided into those with smaller and bigger rooms where the rents for flats with smaller rooms are from $40/- to $44/-. Shops with a single frontage are charged $60/- per month and $130/- per month for those with double frontage.

4. Thean Tek Road (Jalan Shaik Madar)

This scheme is in two phases, consisting of 91 units of Malay type of houses and six shops. Families of at least 6 persons and having an income between $150/- and $250/- per month and are residents of Georgetown are eligible. Rents range from $37/- to $42/-, increasing with the provision of certain amenities such as fnecing and enclosure.

5. Kampong Selut

This comprises a total of 116 units of Malay type houses and 96 terrace houses. All terrace houses are rented but owners of houses that had been demolished as a result of slum clearance, could purchase the houses on monthly instalments of $35/- per month for the semi-detached and between $28/- per month and $35/- for the rest.

6. Dato Kramat Road

The scheme consists of 26 subsidised units meant for residents whose houses were demolished to make room for widening of the road. The rents chargeable are $35/- for 13 housing units, $28/- for six lock-up shops and $40/- for seven shops. The remaining 14 non-subsidised units are charged economic rental of over $70/- per month for the housing units, while the shops are tendered for $60/- to 120/- per month. Only those with a family of at least five persons and an income of over $250/- per month are e eligible.

7. River Road Scheme

A rehousing scheme for the squatters of Prangin Road and the rent chargeable is only $15/- per month.

The non-subsidised units are charged economic rent. All such units have to be advertised when necessary and are allocated by ballot among eligible applicants. Eligibility is based upon the following: -

(i) a family should consist of not less than 5 members;

(ii) the monthly income should not be less than $300/- or more than $500/-;

(iii) applicants should be federal citizens.

Shops in the schemes are tendered for and usually the highest bidder is allocated the shop.

Non-Subsidised Schemes

1. Jelutong Road Flats

They are made up of four blocks each consisting of 12 units rented out at $50/- per month. The families eligible are those with at least six persons with a monthly income of between $200/- to $350/-.

2. Rifle Range Flats

They consist of seven blocks of 112 units each rented out at $40/- to $48/- per unit and $75/- per month for lock-up shops. Eligible families should have family size of not less than 5 persons and an income between $200/- to $350/- per month.

3. Pulau Tikus Flats

This is a very small scheme of only fourteen units with 6 units of flats and 8 shops. The rent charged per unit is $80/- per month while the shops are tendered. Tenants must have an income of not more than $300/- per month.

4. Trenggganu Road Housing Scheme

This is in four phases. Phase I consists of 9 units of 3 rooms and 87 units of 2 room flats. The scheme is divided into subsidised and non-subsidised units. The subsidised units are for those with an income of between $150/- and $200/- per month at a subsidised rent of between $32/- and $38/- per month. In the non-subsidised units the economic rentals charged range from $60/- to $75/- per month again depending upon the floor, the higher the cheaper. Those elegible must have an income of between $250/- and $500/- per month and a family of at least 5 persons.

The 96 units in Phase II are also on an economic rental basis while the 95 units in Phase III are subsidised. Work on Phase IV is still in progress.

Rents charged, whether subsidised or on economic rental, are related to the size of the dwelling as well as the cost of the scheme. It is a question of what the local authority will get back, though the City Council claims that it is not out to make a profit or loss.

From the accounts of the City Council, most years show a deficit as far as the financial administration of the schemes are concerned. Appendix C shows that 1962, 1963 and 1964 were deficit years and there was a surplus in 1965 and 1966 only after a sum of $100,000 was transferred from the General Rate Fund.

As far as cost of construction is concerned in the City Council housing projects, it is found to be comparable to the state housing schemes. The average construction cost per unit of timber detached and semi-detached houses is in the region of $4,000 (Refer to Table 12) and the construction cost per square foot is between $6/- to $7/-. In the case of flats the average construction cost per unit ranges from $2,000 for one room units to $4,500 for three room units.

The Trenggganu Road scheme was constructed at very high cost figures. There are one, two and three room units with constructing costs ranging from $4,000 to $6,050 per unit. Service cost per unit is the highest found in any of the schemes, at $700/- per unit for the four storey blocks and $1,500/- for the 12 storey flats. This can be explained by the fact that the site needed a considerable amount of earth filling and piling costs tend to be high because of the soft ground. In some instances piling depth came to 80 feet.

According to the City Council this scheme is not wholely a low cost housing scheme but a mixed one where there is an intergration of subsidised and non-subsidised units. The flats in this scheme are of a higher standard in that they have a better finish and have bigger floor areas when compared to the other low cost housing schemes. This partly accounts for the high construction costs. The City Council has tried to justify the high construction cost involved with the argument that the...

TABLE 12

MAJOR CITY COUNCIL SCHEMES

Scheme	Type	No. of Units	Average Construction Cost Per Unit $	Average Service Cost Per Unit $	Floor Area Sq. Ft.	Cost Per Sq. Ft. (Exclud. Services) $	Density (Units Per Acre)	Source of Funds
1) Thean Teik Road	Malay Type houses	101 dwellings 6 shops 107	4,500	300	Dwelling 924 Shops 860	4.87	10	City Council funds
2) Campbell Street People's Court	F Flats of 1 and 2 rooms	88 flats 16 shops 104	2,000 - 1 room unit 3,300 - 2 room unit 4,000 - shops	500 500 500	264 390 410	7.57 8.46	-	City Council funds
3) Kampong Selut	Malay Type houses	96 terrace hses. 61 - 4 room timber 46 - 3 " " 12 - 2 " " 6 - 2 room semi-detached 222	4,200 5,400 4,400 3,600 4,200	600 (inclusive of filling) 600 600 600 600	854 868 674 574 664	4.91 6.22 6.52 6.31 6.32	18	Federal Loan - $860,000. 17 years at 2% and 60 years at 5%.
4) Rifle Range	Flats	112 - 3 room 3 - shops 115 T	4,500	500	504	8.93	-	Housing Trust loan $560,000 at 5% repayable over 30 years.
5) Trengganu Road	Flats	3 - 1 room units 366 - 2 " " 104 - 3 " " 10 - shops 483	Ranges from $4,000 - $6,050 per unit.	700 1,500 for 12 storey flats	216 400 - 560 635 - 690 395 - 755	-	60	Federal Loan - $2 million and $600,000 5% - 60 years

Compiled from figures made available by the City Council.

flats are mainly for renting and must therefore be built to suit the requirement and liking of prospective tenants.

As a result of the higher standard of accommodation and the higher building costs involved, the economic rentals charge tend to be higher than those for the other schemes, at $60/- to $75/- per flat per month. The original policy was that only those with an income of $250/- to $500/- per month and a family of at least five persons were eligible for the non-subsidised units. When it came to filling up the flats there was difficulty in getting people to move in. The authorities concerned gave the explanation that this is because people seem to have an aversion to staying in flats. A better reason would be that the rentals charged were too high for people in that particular income category. Because of the lack of response, the City Council had to revert from its original policy and allow any Tom, Dick and Harry to become tenants, regardless of the size of their income or family.

The Kampong Selut scheme is another interesting scheme because it is the only exception to the City Council's policy of renting rather than selling its low cost houses. It was a slum clearance scheme in a Malay reservation and the detached, semi-detached and terrace houses built were to be rented out to those whose houses had been demolished. However, most of the residents preferred owning to renting their houses. As a result the City Council was forced to make an exception to its original policy and allow purchase of the newly built houses on a monthly instalment basis.

A prominent feature of the City Council schemes is the wide variety of designs that are used in its schemes. Even within a single scheme there is a large range of designs. In the Kampong Selut scheme there are 3 different house types - (terrace, detached and semi-detached timber houses) and there are two, three and even four room units. In the Trengganu Road flats, there is not only a mixture of one to three room units but the floor areas of units having the same number of rooms seem to vary. The City Council has defended this practice by saying that its housing programmes are not on a large scale so that there would not be any great benefit from standardization of design. In addition it has its own technical department to do the work and would not therefore be incurring any extra cost in switching designs.

As has been mentioned before the City Council is in favour of renting rather than selling its low cost housing units and flats. It is the economics of renting versus the economics of sales. Since the state government took over the running of the City Council, there have been suggestion and examinations into the possibility of selling City Council flats to the tenants as was being done in the state housing schemes. How this is going to be done is the problem for most of the tenants have been paying rent for some time. Moreover, since many of the schemes were built purely from Council funds, it makes it necessary to examine the question of whether the Council is in a position financially to implement such a proposal since state and federal schemes on a sale basis are heavily subsidised by the two governments. The question that is posed is whether the Council is able to provide such subsidies.

PLATE 11. CITY COUNCIL FOUR STOREY FLATS AT RIFLE RANGE

PLATE 12. CITY COUNCIL FOUR STOREY AND SIXTEEN STOREY FLATS IN TRENGGANU ROAD

CHAPTER V

HOUSING CONSTRUCTION

Cost and Land Use Analysis of Low Cost Housing

Actual building construction generally involves two considerations - to get the job done as quickly as possible and at the lowest cost compatible with good building standards, that is, a fast building rate and reduction of building costs.

Table 13 shows a cost analysis of the various types of units constructed in our low cost housing programmes. A general observation shows that normally high buildings cost more than low ones. It may be essential to build at high densities through the construction of multi-storeyed buildings or flats but high density buildings are never cheap. From an analysis of comparative cost figure given in table, it is seen that detached and terraced houses and 4 storey flats have the lowest cost in terms of cost per square foot of building ranging from $5/- to $7/-. In comparison multi-storey buildings of twelve and fifteen storeys show cost of building per square foot over $10/- .

Detached houses have the lowest cost in terms of cost per square foot of building but this low cost may be explained by the fact that they are timber houses which would naturally be much cheaper in terms of cost of construction than the other house types. If timber houses are excluded, while a comparison is made between brick terraced houses and four storey flats, the latter shows lower cost in terms of cost per square foot of building, cost per square foot floor area per person as well as total cost of building per person (excluding cost of land), an indication that they are the most economical in terms of construction costs. This is because of the lower service costs for flats which are spread over a greater number of units and also because flats have a much smaller floor area. The total cost of services for four storey flats is only about half that of terrace houses.

As multi-storey buildings increase in height there is a general tendency for costs to rise. The total building cost of flat in the high block is much greater than the cost of the house or the flat in the low block because for high blocks the foundations have to be more elaborate, the plumbing and electrical work have to be longer and more complex and lifts, balconies, stair-cases and greater access space have to be provided and finally, there is the additional cost of the reinforced concrete frame itself. But when a comparison is made between twelve and fifteen storey flats, the latter has lower cost per square foot of building as well as lower total cost of building per person. This is perhaps due to the fact that it becomes more economical to build beyond a certain height. You get increasing returns to scale as fixed costs remain constant but after a certain point costs will increase as decreasing returns to scale set in.

The general tendency is for building cost to rise with an increase in the height of building and money can be saved by palnning for a minimum of high buildings. However, the area of land used for low buildings is very much higher than that for multi-storey buildings. The area of land used per person ranges from 1392 square feet for detached houses to 62 square feet for 15 storey flats (refer to Table 13). Though construction costs per square foot may be higher, where the question of land is important, there may be no alternative but to resort to high density building. Where land values are high as manifested by the exhorbitant prices that have to be paid for their acquisition and where land suitable for public purposes is rapidly depleted, there is a need to make the best economic use of the available land. This consequently motivates the policy of building upwards. It is agreed that in urban areas where there is a considerable amount of overcrowding and where there is an ever expanding population, a less prodigal use of land is essential. To conserve building land and to avoid unnecessary low densities for the area, the most 'economic' type of accommodation would be in the form of multi-storeyed flats. Within the city limits schemes of detached, semi-detached and terrace housing and in some instances even four storey flats are not suitable as they contain too few units and house too few people for the amount of valuable land they use up.

Multi-storey buildings have higher densities both in terms of housing and population densities as shown by the following table. The number of persons housed per acre increases as you move from detached timber houses to 15-storey flats, that is, from 30 persons per acre in Type TV3/1 (timber detached houses) to 702 persons per acre in 15-storey flats. In the case of housing dansity the detached housing schemes have the lowest density of only 10 houses per acre (nett) and 7 houses per acre (gross)[1]. Brick Terrace houses of the type L3/3 have a housing density of 34 houses per acre (nett) or 17 per acre (gross). In the case of 4-storey flats the density is over 70 flats per acre while in 12-storey flats and above the density is well above 100 units per acre.

In highly urbanized centres like Penang and Kuala Lumpur the economics of land conservation far outweighs any savings in cost that may be derived by planning for a minimum of high buildings so that the present tendency is towards high density schemes in the form of multi-storey flats of 15, 16 and 17 storey flats.

The life expectancy, repair or maintenance costs as well as service costs of the different housing units have also to be analysed because they form part of the capital cost of housing. All low cost timber houses are built from tanalised timber which have an expectation of life of sixty years and more. The manufacturers guarantee that timber, if treated to their specifications, can withstand termites, decay and.....

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[1]Nett density allows only for land actually used for house plots. Gross density includes roads and open spaces in housing area only.

TABLE 13

LOW COST HOUSING COST AND LAND USE ANALYSIS
COMPARATIVE TABLE

House Types	Timber Houses		Brick Terrace	Multi-storey flats (average of total area of one, two & three roomed flats taken as one unit)		
	Type TV 3/1	Type TV 3/2	Type L 3/3	4 storey	12 storey	15 storey
Total floor area	608 sq. ft.	643 sq/ ft.	708 sq. ft.	549 sq. ft.	628 sq. ft.	662 sq. ft.
Total building cost including internal services and sanitation	$3,047.00 per house	$3,693.23 per house	$4,745.00 per house	$3,667.00 per flat	$7,096.40 per flat	$6,626.62 per flat
Cost per square foot of building	5.00	5.74	6.70	6.68	11.31	10.01
Total cost of services (roads, water-mains & electricity) per house or flat)	1,344.25	1,344.25	847.52	354.00	85.90	681.00
Cost of services per sq. ft.	2.21	2.21	1.19	0.64	0.13	0.97
Floor area per person (6 persons/unit)	101.30 sq. ft.	107.00 sq. ft.	118.00 sq. ft	91.43 sq. ft.	104.61 sq. ft.	110.31 sq. ft.
Cost per sq. ft. floor area per person	7.22	7.84	7.90	6.74	11.24	9.95
Persons per acre	30	42	102	426	660	702
Area of land used per person	1,392 sq. ft.	1,029 sq. ft.	427 sq. ft.	148 sq. ft.	122 sq. ft.	62 sq. ft.
Total cost of building per person excluding cost of land	731.87	839.58	932.00	616.50	1,176.69	1,098.49

Source: Housing Trust Federation of Malaya Annual report - 1961 pg. 49

blight for a minimum of twenty years. Repainting can be done every five years with wood preservative or alternatively it can be repainted with enamel paint. If wood preservative is used the average cost of repainting per house would be between $100/- to $200/-.

Timber houses need more frequent maintenance than hollow block terraced house of reinforced concrete columns which have a life expectancy of about a hundred years. Maintenance involves a new coat of paint every four to five years with cement base paint or lime wash. Repaint work with cement base paint comes to about $200 per unit and if lime wash is used then, probably it would be about 30% cheaper.

In the case of flats, it would involve not only maintenance but also service costs. The usual procedure in low cost housing schemes is to charge $1/- to $2/- per flat per month for public maintenance services. This is only for the external works. Repainting of the external structure can come up to about 5% of total building cost. This is the very minimum and in certain cases it can come up to more. Internal maintenance work is the business of the owner and can cost another 5% to 10% of total building cost. Service cost would include the servicing of lifts, the main water pumps and septic tanks if they are not within the vicinity of the City Council area. The servicing of a single lift comes to about $200/- per month and this excludes repairs and spare parts.[2] The overall cost would come to about 3% to 5% of that section of works.

Components of Cost

To see where the building money goes in the actual construction works, an attempt is made here to break down construction costs into its various components and what proportion of construction costs each item takes up. Figures were worked out from the actual tender sums (which include material and labour costs as well as profits and overheads) obtained for 3 low cost housing schemes in Penang - the Noordin Street Ghaut scheme which consists of a block of 7-storey flats comprising a total of 393 units and the Mak Mandin Scheme of 3 blocks of 4-storey flats totaling 240 units and Ayer Itam Phase II of brick terrace (Refer to Tables 14, 15 and 16).

In the case of flats the biggest component in total construction cost is formed by the main structure of the building. In the Noordin Street Ghaut scheme is takes up over 5% of total cost while in the Mak Mandin scheme it forms 45.5%. It comprises of a reinforced concrete superstructure (which is the most important part within the component of the main structure, making up as much 35% of total costs) reinforced concrete pile caps for thee foundation, brick, concrete, carpentry, joinery, ironmongery, and metal works, plastering, rendering and wall tiling as well as glazing and painting work.

Piling cost is the next biggest item in the list. On the average it forms 20 - 25% of total cost and where it should happen to exceed 40 to 50% of total costs it becomes uneconomical to undertake such a scheme. Thus before contracts are signed and actual construction work started it...

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[2] Based on Personal interview with official of Housing Trust, Federation of Malaya.

TABLE 14

MAK MANDIN SCHEME - COST COMPONENTS
(FLATS - 3 BLOCKS OF FOUR STOREYS
240 TWO-ROOM UNITS

Components of Total Cost	$	% of Total Cost
Main Structure	604,689	45.5
Electrical Installation	69,500	5.2
Sanitary and Sewage Works	84,023	6.3
Plumbing Installations	79,530	6.0
Roads and Footpaths	6,661	0.5
Lifts	-	-
Prime Cost and Contingency	55,000	4.1
Earthworks	20,000	1.5
Total Building Cost	934,173	69.1
Piling	394,432	29.7
TOTAL	1,328,605	98.8

Compiled from figures obtained from the Housing Trust, Federation of Malaya (Regional Office - North).

TABLE 15

NOORDIN STREET GHAUT SCHEME - COST COMPONENTS
(FLATS - 1 BLOCK OF SEVEN STOREYS
384 TWO-ROOM UNITS AND 9 SHOPS

Components of Total Cost	$	% of Total Cost
Main Structure	940,338	54.0
Electrical Installation	100,831	5.8
Sanitary and Sewage Works	103,420	5.9
Plumbing Installations	103,829	6.0
Roads and Footpaths	3,650	0.2
Lifts	55,550	3.2
Prime Cost and Contingency	94,230	5.4
Earthwords	28,250	1.6
Total Building Cost	1,432,180	81.1
Piling	306,803	17.6
TOTAL	1,738,982	99.7

Compiled from figures obtained from the Housing Trust, Federation of Malaya (Regional Office - North).

TABLE 16

AYER ITAM PHASE II
A HUNDRED AND SIX LOW COST BRICK TERRACE HOUSES

No.		$	%
1	Site Works..	1,500	0.4
2	Supply of Materials and Construction of all Brickwork and Concrete Work	140,520	36.2
3	Supply of Materials and Construction of all Joinery Work..	96,990	25.0
4	Supply and Laying of Corrugated Asbestos Cement Roofing and Adjustable Asbestos Cement Ridges	23,850	6.2
5	Rendering of Internal and External Walls ..	20,140	5.2
6	Supply of Materials and Painting with Cement and Oil Paints	22,260	5.7
7	Installation of Plumbing and Water Supply ..	15,900	4.1
8	Sanitary Installations..	19,080	5.0
9	Electrical Installations	12,190	3.1
10	Supply of Materials and Laying of all Precaste Concrete Surface Water Drains ..	3,180	0.8
11	Supply of Materials and Construction of Footpath, Access Culvert, Fencing and Gate	9,322	2.4
12	Supply of all Materials and Construction of Sewers and Manholes	12,540	3.2
13	Contingency Sum	10,000	2.6
	TOTAL COSTS	387,472	99.9

Compiled from figures obtained from the Housing Trust, Federation of Malaya (Regional Office - North).

is necessary to carry out soil investigations on the site to determine the length and cost of piling. If the test shows that costs are too high then the site has to be abandoned or they have to try to find methods of remedying this defect. In the Noordin Street Ghaut Scheme piling cost was 17.6.% of total costs while the Mak Mandin Scheme which comprised only 4-storey flats, showed a very much higher percentage figufe, forming 29.7% of total construction costs. This is mainly because of the site that was chosen. The land was formerly swampy ground which had been filled. From initial soil investigations the estimation was that piling would not go beyond 80 feet and cost was calculated to be around $265,130 but when actual works started the pile depth went to beyond 120 feet in some places so that actual piling cost rose to $394,432, an increase of over $100,000 above the estimated cost. As a result this scheme is one of the costliest schemes undertaken in Penang in terms of cost per square foot.

From the tables it is to be noted that road works and earthworks (which include perliminaries, sites and excavation works) form a very small percentage of total costs in both the schemes that are being studied. In both cases roadworks and footpaths take up less than 1% of total cost and this may be explained by the fact that both schemes are relatively small in size and sited in developed areas where a good road system had already been installed and all that was necessary to be done was to build a few small side roads to join up to the main roads that are already there. If the schemes had been on a much wider scale and there had been a need for a much bigger network of roads then the cost of roadworks could have risen to as much as 5% of total construction costs. In the case of earthworks the 1.5% and 1.6% found in these two schemes is quite a normal percentage in cases where there is no extensive excavations or cutting to be done in the clearing and preparation of the site.

In brick terrace houses there are no piling costs. The biggest cost component comes from the main structure consisting of brick and concrete work including precast concrete slabs and lintols. It come up to 36% of total construction costs. Site works take up less than 1% of total costs, indicating that not much earthworks or cutting was needed. The next biggest item comes from joinery work making up 25% of total cost. The supply of services such as drains, water supply, electricity and sewerage forms roughly about 16% of construction costs.

Scope for Reducing Cost of Dwellings

In low cost housing the main consideration is cost and so the aim should be to reduce building costs to as a low a level as possible while at the same time maintaining a certain minimum building standard. There are various possibilities of reducing the total capital cost of housing: -

1. economy in the designing of the schemes and house types to be used in low cost housing;

2. improvement in the contracting system;

3. economies in the use of building materials;

4. experiments with new building methods which are cost savers such as the various methods of prefabrication;

5. increasing the efficiency and size of the building construction industry in the country;

6. improve the supplies of basic building materials;

7. increase the scale of low cost housing projects so as to allow for economies of mass production.

1. House Types and Designs

In any housing scheme as far as cost is concerned, the planning of the buildings are important. The designer should be concerned not only with creating good individual dwellings but he must also evolve economic designs. The basic inclination of any architect is perhaps to ensure value for money but this is by no means necessarily the same as lowest initial cost. Since in low cost housing considerations of first cost are very important, there is the strongest reason to save money by using the cheapest alternative but at the same time there are a variety of other factors that have to be taken into account. The design of the house type must be suitable for our humid tropical climate as well as to be able to fit in the differing needs of a multi-racial society. You have to build to suit the environment and the people for whom you are building or you may have difficulty getting the right people to move in, for example, it is the general observation that Malay families have a preference for detached houses with a surrounding plot of land where they can carry on their daily activities. The designer should also bear in mind the long term effects where he should make use of long lasting materials with low maintenance costs wherever possible even though initial costs may be high.

Over the years the Housing Trust has produced a variety of designs for timber and brick houses as well as for flats. Through experience it has been found that a 3 roomed design of either brick or timber has proved to be the most popular and economic and in the case of flats a 2 roomed has been found to be the most economic.[3] In considering the prices per dwelling or cost per square foot it is found that tender prices per dwelling increases less than proportional to area; tender.....

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[3] Housing Trust, Federation of Malaya Annual Report, 1961, p. 41.

prices per square foot falling as area increases. Thus the smaller house types consisting of one or two rooms and a kitchen and bathroom with a total area of 376 square foot were generally economical as the cost of construction per square foot was approximately $7/- and the total price in the region of $2,300/- per unit whereas for the larger house types with a floor area of 624 square feet, the cost of construction was approximately $5/- per square foot giving a total price of about $3,000/-.

A big reduction in design costs can also be brought about by avoiding the tendency to switch building designs rather frequently and instead, try to standardise on a smaller range of well tried and proven designs. This may prove to be a bit of a problem in this country especially when the preferences of different groups in the community. However, as far as possible the Housing Trust has tried to standardise the designs for low cost housing[4].

The different house types have the following basic points of design aimed at reducing construction as well as maintenance costs[5].

Timber houses

(a) All timber used is pressure treated with chemical salts to protect it against termite and insect attack.

(b) Houses are raised off the ground on brick piers which are easily adjusted for varying ground levels, thereby avoiding expensive excavations.

(c) Light weight asbestos cement for roofing to save weight (traditional palm leaf thatch is not economical or practical).

(d) No ceilings to save cost and improve air circulation.

(e) Internal doors are omitted to save cost.

Brick Houses

(a) Built in terraces to save costs on services and sanitation.

(b) No plaster on the walls or ceilings and no cement screed on walls to cut down maintenance cost .

Layouts

(a) Footpath access wherever possible and reduction of roads to a minimum.

(b) Apart from large public open spaces, inclusion of all minor open space into house plots to cut down maintenance costs.

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[4]See Appendix D for the house types that are being used for low cost housing schemes.

[5]Housing Trust, Federation of Malaya, Annual Report 1962, p. 54 to 55.

2. The Constract System

In all low cost housing projects none of the authorities concerned undertake direct construction work but it is in all cases done through a tendering system. To bring down contract costs the door should be open to all contractors who wish to tender, thereby increasing the number of contractors available to it and getting tenders to more competitive levels. This is usually done through a system of open tender whereby all contractors irrespective of whether they are Public Works Department registered or otherwise, are permitted to tender. There should be no restriction of contractors to any particular class.

The advantages in the open tendering system are as follows:-

(a) Through an open tendering system there would be a greater number of contractors tendering for a contract irrespective of the value. This is important especially in big contracts of $1 million and above. If the Public Works Department system of tendering were followed then tenders would definitely be less competitive as only Class A contractors are permitted to tender for contracts of $1 million and above and the number of active Class A contractors is limited.

(b) The greater the number of contractors participating in a tender the lesser the chances of collusion among contractors for it is a well-known fact that sometimes contractors can enter into some sort of agreement to avoid undercutting each other for particular contracts. This is very possible in tenders where only a few contractors are participating and the tenderers are known to each other.

(c) Small contractors have shown that they are as efficient and capable of executing large contracts satisfactorily as any big contractor and often at a lower tender sum because big contractors usually have higher overhead expenses and therefore their prices tend to be higher than that of smaller contractors.

(d) The participation of small contractors in an open tender usually tends to make the bigger contractors more careful in their pricing in order to be more competitive. This promotes a higher standard of tendering among contractors.

(e) It is found that the work involved in low cost housing projects is usually within the scope, experience and financial capacities of the average contractor. For example, a contract of $1 million normally calls for the construction of about 300 units of low cost houses of one or two types. Though the above contract may be big, the work is simple, repetitive and manageable even by small contractors and....

does not involve a huge financial outlay by contractors in the form of purchase of heavy and expensive equipment and materials.[6]

Even though an open tendering system has been adopted in our low cost housing schemes, the average number of contractors who submit tenders in any one scheme is usually very low when compared to experiences in other places like Singapore. In many cases contracts had been awarded to contractors from Singapore. This indicates that there is room for a substantial increase in the number of contractors in the country. A problem that is often encountered is that because of the building boom certain contractors have taken on far too many jobs without the necessary capacity to deal with them. The amount of labour and building materials required during the contract period would extend well beyond the financial means of the contractor, with the resultant loss in the speed of construction and the quality of the work produced and often in non-compliance with specifications.

There had been experiments by the Housing Trust in direct contract management where they tried to adopt a modified form of direct labour contracting in schemes where timber houses were to be constructed with a view to obtaining the participation of local labour in a local housing scheme and also in the hope that costs would be reduced.

In this modified form of direct labour contracting the Housing Trust was responsible for the purchase of all required material and the employment of a labour contractor who was responsible only for the employment of the workmen, as well as site management and coordination of work. From the final results it was found that not only was cost higher by 4% than the lowest tender that had been received but the contract period was also slightly longer. This incidentally compared with recent experience in Nottingham, United Kingdom where it was found that houses built by direct labour cost approximately 40% more than those built by contract.[7]

3. Building Materials

Economies in building materials include using concrete hollow bricks for interior walls instead of bricks. It is..... estimated that there is a saving in cost of up to 10%. As

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[6] Housing Trust, Federation of Malaya, Annual Report 1965 - 66, (Draft) p. 5.

[7] Housing Trust, Federation of Malaya, Annual Report, 1958, p. 39.

far as it is possible there should be no plaster on the walls or ceilings and no cement screed on the floors to cut down maintenance costs. Walls have a cement rendering which costs only about fifteen to twenty cents per square foot and have a coating of colour wash costing five to six cents per square foot. In Singapore they are currently using ceramic bricks on exterior walls to cut down paint work. To cut down on the cost of building materials even the ceiling heights have been reduced from ten to eight feet. To reduce costs even further the thickness of the walls have been brought down from four inches to two and half inches though in actual practice not much is saved.

To bring costs down to a minimum an efficient and ready supply of basic building materials is important. A shortage of the basic building materials such as bricks, sand and granite in particular can cause delays and higher costs.

Cost considerations would tend to favour the use of the cheapest materials available and some have advocated that only the cheapest materials should be used even if they have to be imported. However, this policy is contrary to the nation's import substitution efforts which advocate the use of as much local materials as possible even though costs may be higher than those of imports.

4. Prefabrication

Prefabridation or the industrialised system of building has been suggested as a means of reducing building costs. It covers a great variety of methods by which parts of the houses are manufactured in factories under controlled conditions, brought to the site and assembled within the shortest possible time, thus reducing to a minimum the work at the building site which is usually slow and subject to hazards of weather and local conditions of all kinds. The prefabricated method normally is responsible only for the structural shell of the building while the provision and installation of the internal works such as plumbing, foundations, final finishes and many other fixtures, have to be done by the traditional method.

Conventional methods are generally employed with respect to low cost housing schemes in West Malaysia but in attempts to reduce building costs the Federal Government resprted to experimenting with new building methods and has now ventured into the field of industrialised or prefabricated housing. Two pilot projects using industrialised housing techniques have been launched in the country for the construction of multi-storey flats, one in the Federal capital and one in Rifle Range, Penang. It is thought that prefabrication can offer certain advantages over conventional methods such as: -

(a) speed of construction which is about 50% of construction time by conventional method;

(b) lower costs which can be achieved after a period of time;

(c) quality control.[8]

Whether prefabrication in this country has any real advantages over the other methods of construction which are already in use and whether it has a part to play in the provision of low cost housing accommodation has to be seen.

(i) Cost of Construction

The objective of all low cost housing programmes is to provide suitable housing accommodation to the poorer sections of the urban community at a rent they can afford and which does not require the payment of either large or unnecessary subsidies. Prefabrication must therefore show that it can produce dwelling units at a lower cost than traditional methods or that it has other advantages to offer. The only way in which comparative costs could be obtained with any accuracy would be to put out to tender for the construction of a number of blocks of dwelling units to a number of contractors using traditional and prefabricated forms of construction.

Prefabrication requires a minimum number of housing units in order to make it economical and feasible for the plant to operate but it can be equally argued that a large number of units will also have the effect of similarly reducing the overall cost by traditional methods of building. If this tendering procedure is followed there is every likelihood that the prefabricated method would not at all prove to be comparable in cost with the traditional methods. In fact from estimates that were obtained from the two pilot projects, it has been found that costs are very much higher when compared to similar types of units built by the traditional method. Of course, this has been excused by the fact that the contractors need time to write off part of their initial capital outlay which explains why cost per unit by prefabrication is slightly more than by building in the conventional way.

(ii) Rate of Construction

The only advantage that the prefabricated system of construction has over the traditional method is a much faster rate of construction. The rate of construction of prefabricated multi-storeyed housing will depend on a number of factors such as the number of factories and their output, the system of prefabrication, efficiency of handling and the speed of erection on the site. The Hochtief method that is in use in Rifle Range can put up six units daily and can go up to a maximum of eight units.

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[8] Public Housing in West Malaysia, Ministry of Local Government and Housing, p. 10.

With the use of one crane it puts up one floor within 5 days while in the conventional technique this would take 3 weeks. Prefabricated method builds at a rate 3 times faster than the conventional method. However, it has to be noted that prefabrication is only concerned with the actual structure and perhaps the outside shell of the building. The finishes which include electrical, sanitary and plumbing work, installation of lifts, piling work, drains and sewers, roads and paths have to be carried out in the traditional manner.

(iii) Quality Control

Prefabrication claims to offer better quality control than conventinal building methods can guarantee and also to be very flexible in design.

However, it has been found that it is generally easier to design to minimum standard requirement with in situ (traditional) work with a reasonable degree of supervision during construction, but this is rarely the case with prefabricated sections particularly those in reinforced concrete which have to be made to a certain thickness and weight in order to guard against the possibility of damage in handling, transportation and erection.[9]

Prefabrication is less fleasible in operation than traditional methods in the sense that in addition to the provision of factories which can only serve within a certain radius or else transportation cost increases, the use of prefabricated structures calls for special equipment for handling and transporting sections.

Prefabrication presupposes 'mass production' and can therefore only operate economically if there is a national guaranteed long term housing programme which will continuously absorb factory products as they come off the assembly line. Delays which may occur at any point in the production erection process can have serious repercussions.[10]

(iv) Climate

Prefabrication is a good method when weather conditions make it difficult to employ the more conventional methods. In Russia, for example it has been used in housing programmes to a greater extent than anywhere else in the world mainly because of the very severe climatic conditions during the long winter months when in much of .....

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[9] Federal Department of Town and Country Planning. Memorandum on the Construction of Low Cost Housing in West Malaysia with special reference to the Greater Kuala Lumpur Region, p. 6 - 7.

[10] Ibid.

Russia the traditional building methods cannot possibly be used and as much work as possible is carried out under controlled factory conditions. At the other extreme, building work in the desert areas of Israel is often carried out in factories under controlled climatic conditions to avoid the very high outdoor temperatures.

In West Malaysia we suffer from no such extremes of temperature.

(v) Working Conditions and Wages

Industrialised techniques of housing originated in the western countries and gained a foothold mainly because working conditions within factories are very much more pleasant than they are outside on building sites particularly when weather conditions are bad in the winter months. With the competing demand for labour and the increasing call for improved working conditions, coupled with the number of man hours lost due to bad weather conditions there was a strong motivation for more and more work to be carried out under factory conditions. In addition in America the wages of construction workers are considerably higher than those of factory workers and it therefore because more economical to carry out as much work as possible in factories. John Dunlop points out that although other factors than labour costs and industrial relations encourage prefabrication of building parts 'the growth in the differential expressed in dollars and cents between factory wages and construction wages has added incentive to this development'. He compares the average hourly earnings in construction and durable goods manufacturing from 1939 and 1956 to show that construction labour earned 23 cents an hour more than manufacturing labour in 1939 and 70 cents more in 1956 and contends that 'although the percentage rise in hourly earnings in the two sectors was almost indentical, the increasing dollar differential provided a strong incentive for the housing industry to experiment with ways of transferring work operations from the job site to the factory.'[11]

(vi) Employment and Industrial Capacity

One of the main aims of prefabrication is to reduce the number of man hours per completed housing unit. No doubt all round efficiency should be aimed at in all.....

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[11] Martin Meyuson et al, Housing, People and Cities, p. 156.

fields but in this particular case it comes into conflict with the Federal Government's national objective of creating more employment opportunities which is particularly important at this stage of development and where there is a high unemployment figure. Huge sums are being invested to create more employment opportunities but if at the same time the Government is going all out to reduce the number of man hours, this is going to neutralise the first effect. A better policy would be to build up a thriving building industry as rapidly as possible, one which is capable of being deployed to any field of building construction. The use of prefabrication will make little or no contribution towards this.

In a developing country industrialization is essential. Prefabrication of large building components would mean the setting up of factories etc. but it is felt that priority should be given to those industries that contribute more towards the economic growth and well being of the nation. Industrialization and technological progress that can be brought about by large scale prefabrication no doubt is important in the development of a country but it should not aim at providing an alternative and perhaps an unnecessary answer to traditional building techniques, unless it can be proved that there is a considerable saving in cost. A better economic proposition is to give priority instead to factories which aim at providing locally many of the items necessary to a mass housing programme which would otherwise have to be imported from abroad at considerable costs, such as standardised windows, doors, partitioning, sanitary and drainage equipment, glass or the production of wall, roof and floor sections for timber prefabricated houses. This would not only promote industrialization but also import substitution and would conform to our overall development programme.

In the East no country has ever attempted prefabrication before. In fact, West Malaysia is the first Asian country to make a venture into the field of industralised housing and whether it will be a success or not remains to be seen. Countries like Singapore and Hong Kong which had more serious and urgent housing problems and more reason to try out this method, had given serious consideration to the question of prefabricating housing units but the idea does not seem to have caught on for very good reasons, one of which is that from studies that had been conducted none of the various methods of prefabrication tried out had been wholely satisfactory as a cost saver. In 1960 the Singapore Housing Development Board investigated thoroughly the possibilities of using factory made prefabricated structures in their housing construction programme. Tenders for the prefabrication, transportation and erection of a prefabricated superstructure for multi-storey flats were received from three foreign firms and one local firm. The four prefabricated methods...

were found to be 18%, 74%, 89% and 113% more expensive than the traditional method. It was then decided to investigate further the cheapest prefabricated method that had been suggested by the local firm to see whether its cost could be lowered but it was found that this method was structurally unsound in parts and any revision added further to its cost. It was finally decided upon to continue with the use of traditional building methods and concentrate on firmly establishing the building industry while at the same time to examine the part prefabrication might play in supplementary the use of traditional techniques.[12]

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[12] Federal Department of Town and Country Planning, Memorandum on the Construction of Low Cost Housing in Malaya with special reference to the Greater Kuala Lumpur Region, p. 9 - 10.

CHAPTER VI

LAND POLICY, ACQUISITION AND COST IN RELATION TO LOW COST HOUSING

No large scale programme of low cost housing and community development can be implemented successfully unless sufficient land is available as and when it is required and at reasonable cost. In fact the key to low cost housing is reasonably cheap funds as well as cheap land with the result that the majority of low cost houses have been built on state or Crown land made available as cheaply as possible. [1] The Ministry will only agree to acquisition of sites when it is considered absolutely essential for the cost of any acquisition will have to be recovered along with the other costs of the scheme and therefore acquisition is to be avoided as far as possible so as not to force rents to an unreasonably high level outside the means of the lower income groups. Thus priority is given to schemes where state land is made available in the form of subsidy free of premium or where only a nominal sum is paid.

So far the state Government of Penang has been able to set aside state land for its low cost housing schemes but this cannot go on indefinitely for state land is in short supply and sooner or later compulsory acquisition must be resorted to in order to continue its low cost housing programme as virtually all state land has now been alienated or reserved.

The state has power to acquire land compulsorily for public purposes e.g. housing, education, industry etc but compensation has to be paid, based on the open market value which is 'frozen' for a period of six months from the gazetting of the intention to acquire. During the 6 months period, access to investigate the land having been granted, the state must declare whether it intends to acquire and whether all or only part of the land. At the end of the period if no action has been taken, the free market value of the land is resumed, although in view of the declared interest in acquisition this will have been considerably enhanced. [2]

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1 It has been argued why a piece of land, simply because it is state or Crown owned or vacant should necessarily be called cheap and therefore necessarily suitable for low cost housing. It may be extremely expensive in the sense of being valuable and cheap housing does not necessarily mean the best land use.

2 Penang Master Plan 1964 p.116

It has been found that due to speculation, the open market value of land has been raised to unrealistic heights. Agricultural land continues to be sold privately at prices around $5000 per acre and then the speculator sub-divides it immediately and resells at prices up to $25,000 per acre. In a recent case the state government sought to acquire 5 acres of land in the mainland rural area near Kepala Batas for the purpose of rural cum agricultural housing. An acquisition award of $10,000 for the 5 acres was refused by the landowners who in turn put forward a claim of $76,000 and $131,000. The High Court awarded $17,500.[3]

The current speculation upon land values has definite effect on the estimated cost of housing programmes. If the recent award for housing land in Province Wellesley (Kepala Batas) is taken as a guide then a figure of $3,000 per acre is likely to apply throughout the really rural areas. Within urban areas and sub-centres it is difficult to assess the 'true' as opposed to the speculative value or to establish a meaningful 'current market value' (basis for acquisition). Usually the subcentre value is $2 and more per square feet gradually rising and in Central Butterworth figures are already in excess of $10 per square feet. In Georgetown the average figure of $2 per square feet within the residential areas climb to over $10 within the central area. In Penang Road this figure may be doubled.[4]

The necessity to have some form of control over land speculation is very apparent. Legislation must be introduced to prevent all such unreasonable speculation in land, while at the same time ensuring that landowners receive a reasonable profit only from land sales. However, so far nothing positive has been recommended.

To control the present haphazard applications for specualtive housing development it has been suggested that a public housing authority be set up and given powers of compulsory acquisition of land together with sufficient funds for large areas of land to be purchased on a long term basis well ahead of building requirements. Agricultural land bought in this way can continue to be run on a profit making basis until such time it is required for development. Land will then be available when required at reasonable costs for low cost housing and all community services. In addition part of it can be sold to private developers for middle class housing and other purposes. Any profit from the sale of such land can help to subsidise the cost of providing essential services.[5]

However, the disadvantage of such a system of land purchase well in advance of requirements is that large sums of development capital are invested in agricultural land, much of which will not be developed for a number of years which the government can ill afford as there is already a scarcity of capital for development.

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3 Penang Master Plan page 86.

4 ibid page 115-116

5 Federal Departement of Town & Country planning, Memorandum on the Construction of Low Cost Housing in Malaya with special reference to the Kuala Lumpur region. page 4-5.

One solution to this is for the government to introduce legislation which would enable land to be designated for public acquisition at any time during the period of the plan, say up to ten years. The price to be paid on acquisition could be related to the price of undeveloped or estate land at the date 2 years prior to the publication of the plan. Thereafter a fixed increase in price might be granted, in keeping with any inflationary trend in the cost of living generally, and not in speculative land prices.

Another major problem with regard to land is the question of squatters. Due to a shortage of land and accommodation vacant land, both state and private, has often been occupied either illegally or with some form of written or verbal permission giving rise to the squatter problem. This is especially prominent around and within the urban areas where population pressures and unsatiable demand for housing are reflected in the growth of extensive squatter settlements. Over the years such occupation has been regularised by the issue of temporary occupation licences, temporary building agreements or similar agreements with the landowners and through long usage this has tended to assume a quasi permanency, giving rise to 'fictional claims' to land.

The state government policy in this matter has been to rehouse and compensate the squatter while the local authority usually requires the landowners to clear his land-through settlement on compensation-before any development scheme is completed. This latter course dictates negotiation at the landowners - squatter level and with no control exercised over inflated compensation claims. The problem of squatter and their clearance entailing such factors as rehousing, compensation and/or a complicated and involved legal process, have contributed significantly to the retarding of much needed development and have given increasing impetus to the widespread, land speculation which has spread throughout the rural and semi-urban areas.

As has been mentioned earlier on, so far State and City Council housing schemes have all been sited on State and City Council land so that there has been no question of land acquisition. The only exception is in the State Kampong Herriot Scheme where land was bought at $1.50 per square foot.

Since all state housing schemes are on a sale basis, the value of the land has to be assessed. The usual procedure is to fix it according to the market value of the surrounding private land as from the time the scheme commenced. A formula has been developed to determine the land premium that the purchaser has to pay. This is usually a very nominal sum of ½% of half of the market value multiplied by the number of years that the land is leased out.

Formerly it was the policy of the State government that all housing schemes were on a freehold basis but since 1966 this policy has been reversed. The state feels that it cannot afford to grant land in perpetuity and thus all schemes are now on a leasehold basis, normally...

for a period of 99 years.[6]

In Jalan Kampong Melayu where the Ayer Itam Phase I, II, and III schemes are located, the market value is around one dollar and fifty cents per square feet. The same value also applies to land in nearby Rifle Range. In Noordin Street which is within the City limits, it is approximately two dollars per square foot. In the more outlying areas such as Telok Bahang or Kampong Berapit, the land value is of course very much lower.

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[6] Information obtained from personal interview with official of the Land Office, Penang.

CONCLUSION

Due credit must be given to the Government (State and Federal) on the fact that it realises the social and economic necessity of housing the lower income groups in the country and has taken a positive move towards tackling the housing problem in the country through its low cost housing programme. The very fact that a separate Ministry for housing had been set up in 1964[1] and the funds allocated for housing had steadily increased from a mere $10 million to $45 million in the Second Five Year Malayan Plan and $150 million in the First Malaysian Plan shows that considerable importance has been attached to this matter. However, results so far have not been spectacular and greater efforts are needed. Certain inconsistencies and deficiencies in the set-up can be detected and there are many improvements that can be made.

One of the main defects to be found in the present low cost housing programme is the lack of good planning. This may be due to the fact that there is insufficiency of information and data on housing conditions and housing needs in the country especially among the lower income categories. Thus one of the first priorities is the need for a comprehensive national housing survey which can give rise to more realistic and effective planning in place of ad hoc and sometimes, uncoordinated planning that is going on, as is demonstrated in the current 'crash programme' that is now being undertaken, consisting of two hundred schemes totalling 8,110 units covering all the states. This programme has been described by the Minister of Local Government and Housing as a 'trial run' to gauge housing needs with regard to design and number for all parts of the country. 'From this we would be able to obtain valuable data, including actual demand in addition to the projected demand which we already have in our Ministry. The programme will also serve as a survey of the peoples' preferences and the income group that can afford these houses etc. This will enable my Ministry to plan more effectively similar programmes in the future to meet the needs of the people'.[2] Here is a case of $32 million being spent on a housing programme that had not been planned and drawn up after an assessment of the number and type of houses required and the areas which have the most urgent need, but rather, it is a programme undertaken without prior knowledge of the actual situation and meant primarily for gathering information.

How far has the Government's efforts in low cost housing been successful in meeting the housing shortage in Penang and in the country as a whole. It can safely be said that performance has fallen far.....

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[1] Before this it had been part of the Ministry of Interior.

[2] The Sunday Mail, June 2, 1968 - '$32 million programme of low cost housing for small towns'.

short of the targets that had been set. In the proposed low cost public housing targets an immediate target of 20,000 housing units annually for the whole country had been set, gradually rising to 50,000 units. Unfortunately present annual output for the whole country is less than 1,400 units (refer diagram 4). In Greater Kuala Lumpur there is at least 7,000 housing units to be erected by Government agencies over the next ten years but the actual construction rate over the past five years is estimated to be in the region of 400 units annually.

As for Penang, the target had been set at 1,680 units annually divided into 1,080 units and 600 units in the urban and rural areas respectively and when the national target increases to 50,000 units, Penang will have a target of 4,200 units, 2690 and 1,510 in the urban and rural areas. Housing statistics show that they have got nowhere near this target. State schemes for the years 1956 to 1966 only came to a total of 1,182 units. However, for the period of the First Malaysian Plan 1966-70, the momentum has increased where under the five schemes that are now under construction or are going to be constructed, a total of 2,083 housing units will be provided while the Rifle Range scheme is expected to yield a further 3,735 units. (Refer Diagram 5)

Within the Georgetown City area statistics also show that the rate of construction has not caught up with the target that had been designated for the urban areas. The highest rate recorded was in 1961 when 602 housing units were constructed but this figure included both public and private construction. (Table 17)

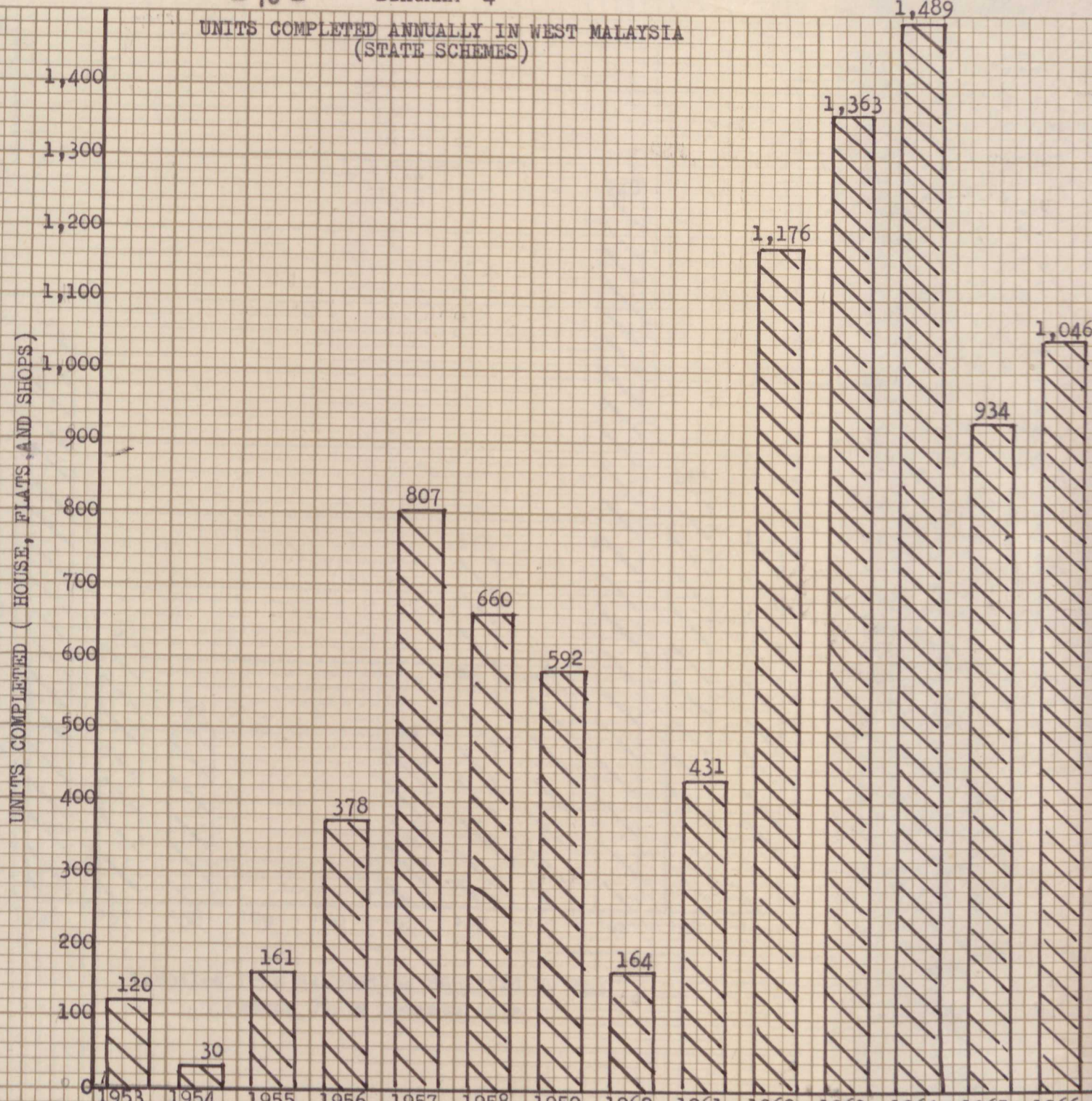
The present rate of construction is certainly short of the targets that have been set and the fact that housing programmes are going to achieve in five and more years what actually needs to be done each and every year underlines the need for greater efforts in our low cost housing programmes. Such a move will require a call for greater allocation from national funds.

In view of the limited resources available for low cost housing the problem is how to deploy it in the best possible way. Optimum results in terms of sheer output tend to be obtained by concentrating on a few big estates in the major towns including Kuala Lumpur, Penang, Johore Bahru, Seremban, Malacca, Ipoh Taiping and Segamat which allow for some of the economies of mass production but criticisms have been levelled against this approach by people who have been bypassed. Questions have been asked on how the programmes have benefitted the various states. It would seem that striking a balance between what is most economical and what is fairness is no easy task.

To meet the present housing shortage a large scale long term programme of low cost housing is necessary. The present organizational set-up appears to be too cumbersome and time consuming to be up to the task. There is difficulty in coordination and other problems arising from the fact that housing is under the jurisdiction of each state government. At present the specifications for low cost housing schemes are drawn up by the local authorities which then approach the Federal...

DIAGRAM 4

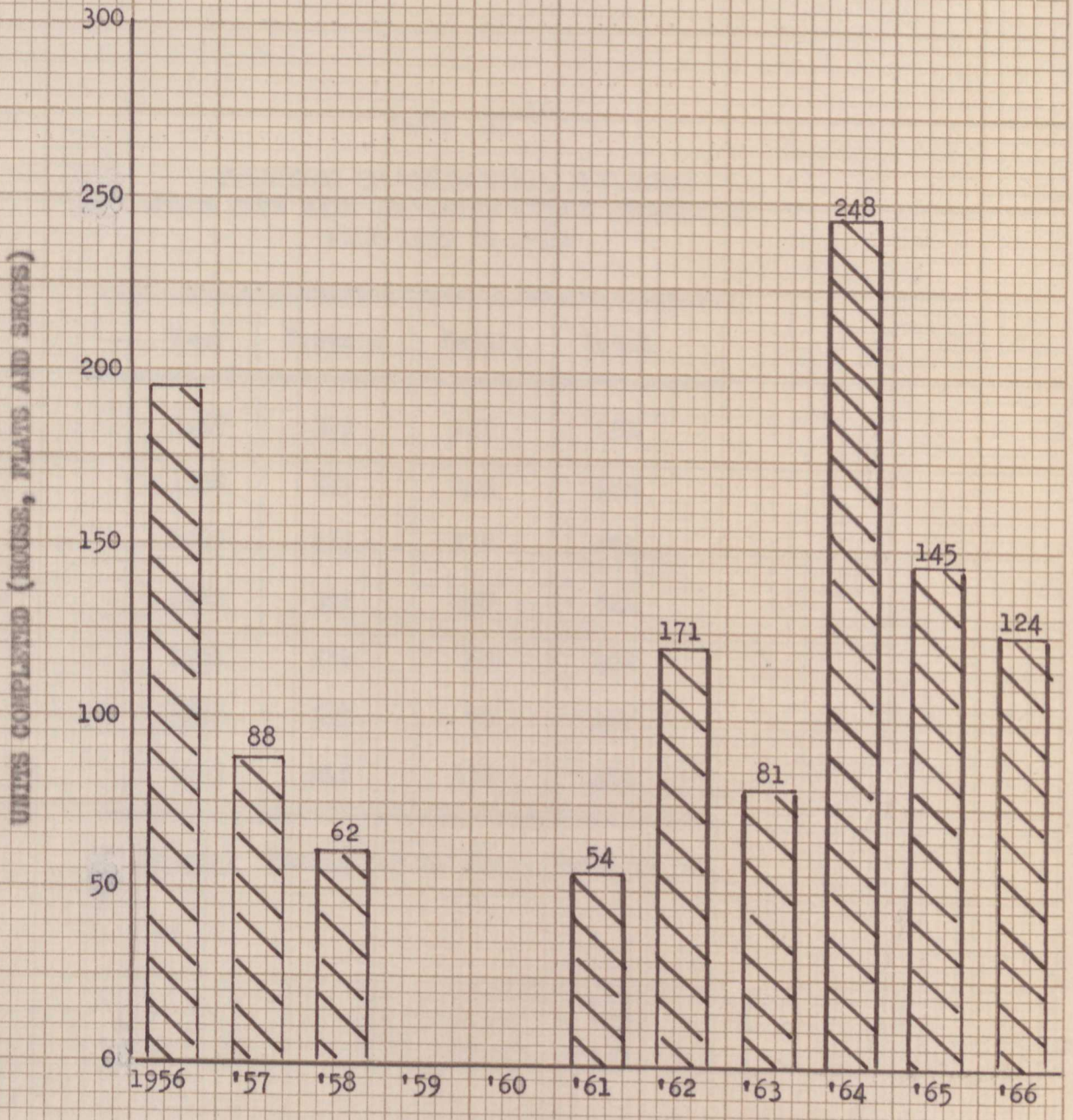
UNITS COMPLETED ANNUALLY IN WEST MALAYSIA
(STATE SCHEMES)



Source: Housing Trust, Federation of Malaya, Draft Annual Report, 1965/66, p. 24.

DIAGRAM 5

PENANG STATE SCHEME - UNITS COMPLETED
FOR YEARS INDICATED



Compiled from Statistics Supplied by the
Penang State Secretariate

TABLE 17

STATISTICS OF RESIDENTIAL BUILDINGS
WHICH HAVE BEEN COMPLETED WITHIN GEORGETOWN
FROM 1957 TO 1963

Year	Private	Public	Total
1957	325	125	450
1958	287	198	485
1959	153	118	271
1960	362	159	521
1961	539	63	602
1962	347	79	426
1963	245	176	421

Source: Penang Master Plan, 1964, p. 91.

Government for loans. The Ministry can to a certain extent, exert pressure for the modification of the plans. However, the Ministry itself does not have a sufficient staff or the necessary expertise to judge the proposals put forward by loan seeker. There is the Housing Trust which serves as an advisory unit but it cannot play its part for it is neither staffed nor organized to exercise really tight supervision over the local authorities and apparently is infrequently consulted. A further disadvantage of the present system is that the Federal Government cannot itself initiate schemes in areas where it feels that housing is badly needed and where the local authority may be unenergetic. As a result of these deficiencies, consideration was given to the idea of setting up a Central Housing Authority with the necessary staff, finances and the authority to carry out an effective housing programme.

In most of the low cost housing schemes that have been undertaken in Penang there seems to be a lack of a corresponding development in community facilities. When a house is constructed water supply, lighting, drainage etc. are automatically provided at the same time as part of the house but in all the plans community facilities and services, which are just as essential to everyday living, are absent. The usual procedure is to obtain a plot of land and erect on it as many dwelling units as circumstances will allow. Shops are often incorporated into the ground floor of blocks of flats with little attention given to the provision of public open spaces and other essentials such as schools. This may be due to the fact that most of the schemes are on a very small scale and such facilities are considered to be the responsibility of other government departments or agencies.

One of the objectives of a mass low cost housing programme is to try and solve the squatter problem but this may not necessarily result because any programme of mass housing will tend to increase the advantages and attractions of living in urban areas and consequently may accelerate the rate of rural to urban migration. The housing programme will be a failure if when part of it has been carried out, there are more people to house and more squatters to clear away than before the programme began. To prevent the urban housing problem from being aggravated by the general nation wide drift from rural to urban areas it is important that the government's housing programme be dealt on a national and regional basis as part of an overall plan of improvement and development in rural as well as urban areas and it can also be used as a tool to assist the implementation of policy on population distribution and location of industries throughout the country.

A point of criticism can be directed against the present method of allocating low cost houses and flats and the selection of applicants. The system is definitely weighted in favour of those with large families. Where total family income is more than $300 but less than $350 per month the family size must not be less than 7 persons and for every subsequent increment of $50 in the family income there must be an addition of one to the family size until the maximum of $800 per month is reached where the size of the family must not be less than 16 persons. This policy tends to encourage large families among the lower income groups, at a time when all out efforts are being made to bring down our population growth rate.

The main aim of a low cost housing programme is to make available low cost houses for the lower income groups at rents or payments which are within their capacity to pay. To make this possible attempts should be made to minimise costs but building costs in this country have been unnecessarily high with the tendency to rise. To a certain extent the high cost might be attributed to increasing costs of building materials and the shortage of certain skills. The answer to this would be an all out effort to expand the building construction industry in size as well as efficiency in order to meet the increase in building activity. Steps should be taken to increase recruitment into the industry and to provide increased training facilities in this field. This would be in line with the nation's policy of increasing job apportunities. If the efficiency of the building industry can be improved, present high building costs can be reduced considerably. The Government can contribute towards the expansion of the industry by adoption of the following policies:-

(i) encourage the formation and expansion of contracting firms and encourage more people to take part in the building industry;

(ii) give technical assistance and advice to contractors to expedite construction work so that obstructions and holding up of work is reduced to the absolute minimum, giving rise to improved efficiency of construction work;

(iii) make sure that payments to contractors are regular so as to enable them to plan their finances and thereby reduce the element of interest costs in their tender prices.

The increased cost of building materials can be overcome to a certain extent by increasing the efficiency of the building materials supply industry. Following the practice of the Singapore Housing and Development Board the total amount of building materials required for housing programme is calculated in detail and the manufacturers of the building materials and supplier are kept informed of the total quantity of these materials required and also the time schedules for delivery. This information enables both the manufacturers and the suppliers to have forward planning and to deliver the required materials on schedule and to some extent reduce their costs. The Board has also gone one step further in that it is starting to manufacture its own building material to ensure a constant supply and at reasonable cost. However, it can be argued that all this is possible because there is a central authority for housing in Singapore which executes all the housing programmes so that it is easier for them to have forward planning. In Malaysia the stepping up of both public and private construction should be a stimulus to the establishment and expansion of industries for the manufacture of building materials and the lowering of costs. New industries should be established while old established industries greatly expanded to cope with the demand of our housing development programme.

The Federal Government's answer to the high construction costs and the show rate of construction is to introduce industrialised building techniques into the country which is supposed to act as a spur to traditional contractors to mechanise their operations to some extent so as to make themselves competitive in the building industry. So far the Ministry of Local Government and Housing has introduced prefabrication to two giant low cost housing schemes in Kuala Lumpur and Rifle Range in Penang. 'The siting of the industrialised housing project in Penang is a deliberate design to bring the Northern States of West Malaysia i.e. Penang, Perlis, Kedah and northern-half of Perak, within the orbit, of industrialised building methods.'[3] There are plans to set up three other such centres to cater for the whole country. However, it would be advisable to see the results of the pilot projects before any further action is taken.

The prefabricated method has an advantage over the traditional method in that it speeds up the rate of construction. In the Rifle Range scheme the speed of construction is three times that of the conventional method. Other than this the prefabricated method does not seem to offer any real advantage over the other methods of construction which are already in use. In terms of cost of construction the prefabricated system in Rifle Range shows that it is one third times more expensive than the traditional method. The question posed is whether this comparatively higher cost can be justified by the construction time saved. Is our housing problem so urgent that a greater rate of erection is necessary irrespective of cost involved.

The attitude of the Federal authorities towards this higher cost is that it is only a short run phenomenon as the investors must be given the opportunity to recover part of their initial capital outlay. In Penang over $2 million was invested in the factory in Rifle Range. It is felt that once the industry is well established, prefabrication may well prove to be cheaper in the long run. However, in the case of Penang it may not necessarily be the case. This method is not economical for small undertakings when the amount of capital involved is taken into consideration. The investors will not find it profitable at all to use industrialised housings for projects smaller than the one that is currently being undertaken in Rifle Range of over 3,000 units. This means that the factory has to serve an area that is wider than just Penang Island itself. But it must be realised that heavy transportation costs are involved when the heavy prefabricated elements are taken across to the mainland. This is going to add substantially to total costs.

It is recommended that every effort should first be made to build up and then strengthen the building construction industry. When a reasonable annual output of traditional public housing units has been achieved, then prefabrication might play a part in supplementing the traditional field.

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[3]Minister of Local Government and Housing, as quoted in Industrial Housing Project, Rifle Range, Penang, Malaysia, p. 7.

APPENDIX A

FLOOR AREAS PER PERSON IN SELECTED COUNTRIES,
(BASED ON: 1) G.A. ATKINSON - MASS HOUSING IN RAPIDLY DEVELOPING TROPICAL AREAS 2) OTHER SOURCES)

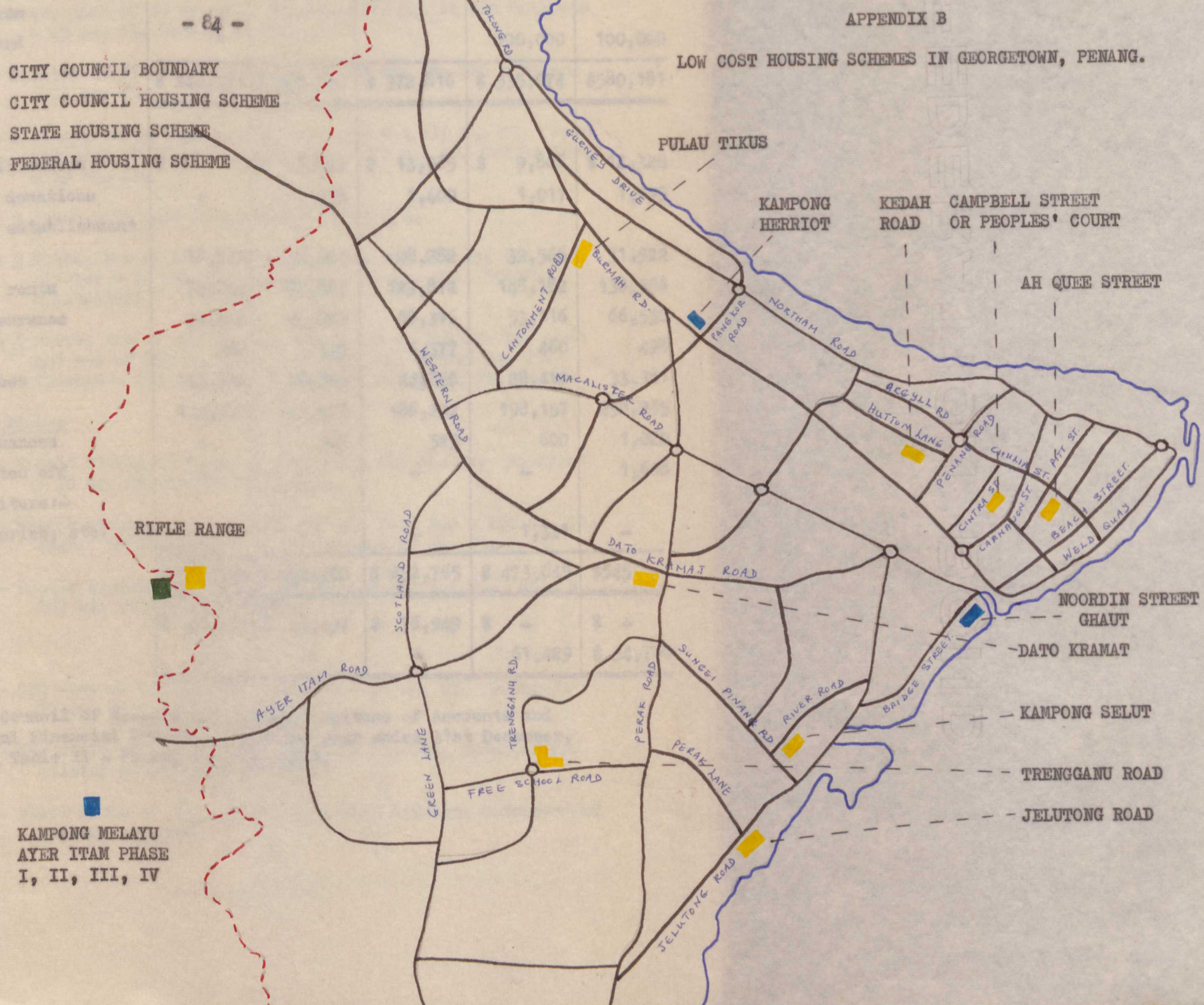
	Sq. Meters Per Person	Remakks
Conditions of Overcrowding	0.7 - 2.5	
Three berth European railway sleeping car compartment	0.76	
Static Caravan United Kingdom	3.0 - 4.5	Based on four person household.
Housing in some large Asian Cities	3.5	
Hong Kong	3.25	Legal minimum and as practised by the Hong Kong Housing Authorities.
	2.17 - 2.25	Flats of Commission for resettlement 1960.
	4.3	Housing Society 1953, 1 - room flats
India	5.57	Recommended minimum Bombay Housing Panel
	6.96	Recommended minimum Madras Provincial Housing Committee 1946.
	9.29	Estimation of Minimum requirements - Health Survey and Development Committee.
Singapore	3.25	Based on Legal minimum of 350 per person and assumed ceiling height of 10 feet.
Philippines	5.03 - 8.55	Project average of 8 PHHC housing projects.
China (Taiwan) Labourer's home	8.75	Four person family (1961)
Japan	6.4	National average (1960) space covered by tatami (mat)
	4.2	Conditions of overcrowding
Some tropical countries	3.7	Legal minimum for Labourer's housing.
Housing in Africa and similar tropical areas	5 - 10	
Libya	3.5	Legal minimum

Kenya	5.9	Two room flats (1947)
South Rhodesia	7.0	Detached bungalows (1955)
Belgian Congo	8.8	Two storey terrace house (1956)
Fiji	10.2	Two storey police housing (1958)
Housing in East Europe and parts of the Mediterranean, also in Latin America	8.12	
Warsaw	8.8 - 11.2	Flats 1953; based on six persons household.
Greece	9.6	Nucleus house 1961
Latin America	12	Recommended minimum for Social housing.
Social housing in West Europe	12 - 17	
Netherlands	12.6	Minimum flats at Vlaardingen
England	13	Welwyn Workers' Cottage (1925)
	15 - 16.7	Housing Manual (1944 houses)

Source: Federal Department of Town and Country Planning, Memorandum on the Construction of Low Cost Housing in Malaya with special reference to the Greater Kuala Lumpur Region.

APPENDIX B

LOW COST HOUSING SCHEMES IN GEORGETOWN, PENANG.



APPENDIX 'C'

PUBLIC HOUSING ACCOUNT

Income:-	1962	1963	1964	1965	1966
Rents	$ 244,36	$ 259,703	$ 372,816	$ 435,074	$480,181
Contribution from General rate fund				100,000	100,000
	$ 244,361	$ 259,703	$ 372,816	$ 535,074	$580,181
Expenditure:-					
Salaries and allowances	$	$ 3,849	$ 13,965	$ 9,806	$ 12,320
Provident fund donations	-	453	1,400	1,017	1,295
Audit fees and establishment Charges	18,710	22,983	28,282	32,566	31,922
Rates and quit rents	72,253	62,823	129,812	148,182	138,556
Repairs and insurance	33,806	45,803	68,316	53,116	66,550
Miscellaneous	386	539	1,377	460	498
Communal Services	15,220	18,029	22,856	28,410	33,381
Loan charges	133,180	141,421	186,232	198,157	258,265
Transport allowances	-	300	525	600	1,020
Bad debts written off	-	-	-	-	1,608
Special expenditure:-					
Arrears of salaries, etc.	-	-	-	1,331	-
	$ 273,555	$ 296,200	$ 452,765	$ 473,645	$545
Deficiency	$ 29,194	$ 36,497	$ 76,949	$ -	$ -
Surplus	-	-	-	61,429	$ 34,766

Source: City Council of Georgetown, Penang. Epitone of Accounts and General Financial Statistics for the year ended 31st December, 1966, Table IX - Public Housing, p.11.

APPENDIX D

TYPES OF LOW COST HOUSES

Detached Timber Houses

House Type	Description
TV 3/1	- 3 rooms, two of 129 sq. ft. each and one 157 sq. ft. Open verandah of 89 sq. ft. Kitchen - 77 sq. ft and bathroom - 15 sq. ft. Modern sanitation.
TV 3/2	- Similar to TV 3/1 but kitchen is 120 sq. ft. and bathroom - 16 sq. ft.
TV 3/3	- 3 rooms, two of 140 sq. ft. each and one 119 sq. ft. Open verandah of 70 sq. ft. Kitchen - 77 sq. ft. and bathroom - 15 sq. ft.
TB 3/1	- 3 rooms with same measurements as TV 3/3.
TB 3/9	- 3 rooms, two of 144 sq. ft. each and one 108 sq. ft. Kitchen - 74 sq. ft. Bathroom - 19 sq. ft. Modern sanitation.
T 6/1	- 5 rooms, two of 126 sq. ft. each, two of 162 sq. ft. each and one of 252 sq. ft. Open verandah of 108 sq. ft. Kitchen - 187 sq. ft. 2 bathrooms - 19 sq. ft. each.

Terrace Brick Houses

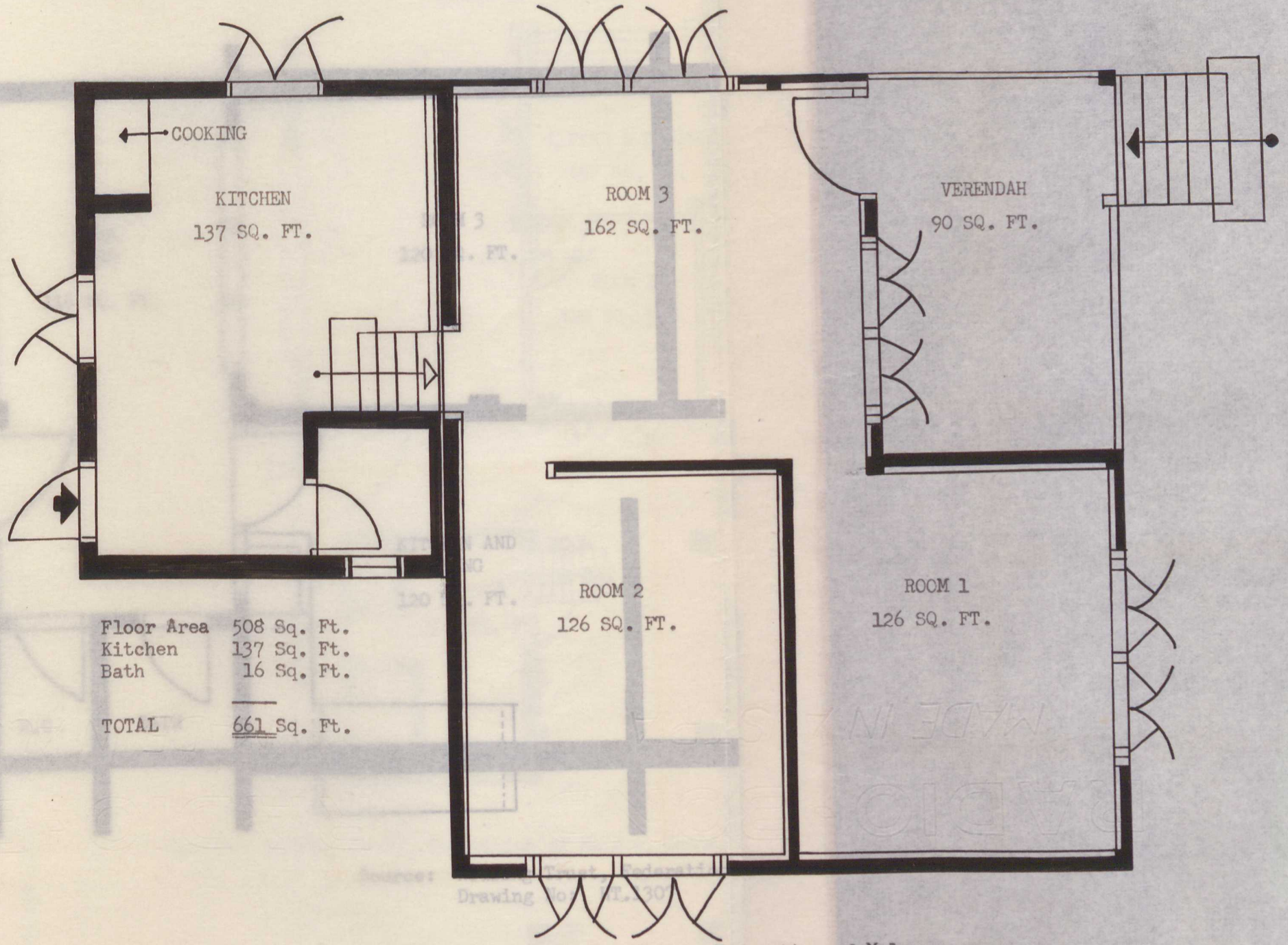
L 3/3	- Single storey, 3 rooms of 160, 140, 120 sq. ft. Bathroom - 16 sq. ft. Modern sanitation.
L 3/7	- Single storey, 3 rooms, one 210 sq. ft.; two - 120 sq. ft. each. Kitchen 74 sq. ft. Bathroom 20 sq. ft.
L 4/8	- Double storey, 2 bedrooms of 129 and 144 sq. ft. Hall - 169 sq. ft. Kitchen 129 sq. ft.

Flats

One room flat	- One room of 127 sq. ft. Kitchen - 28 sq. ft. Bathroom - 17 sq. ft. Balcony included.
Two room flat	- Two rooms of 125 sq. ft. each with kitchen, bathroom and balcony as in one-room flat.
Three room flat	- Three rooms of 125 sq. ft. each with kitchen, bathroom and balcony as anove.

APPENDIX E(i)

HOUSE TYPE: TV 3/2

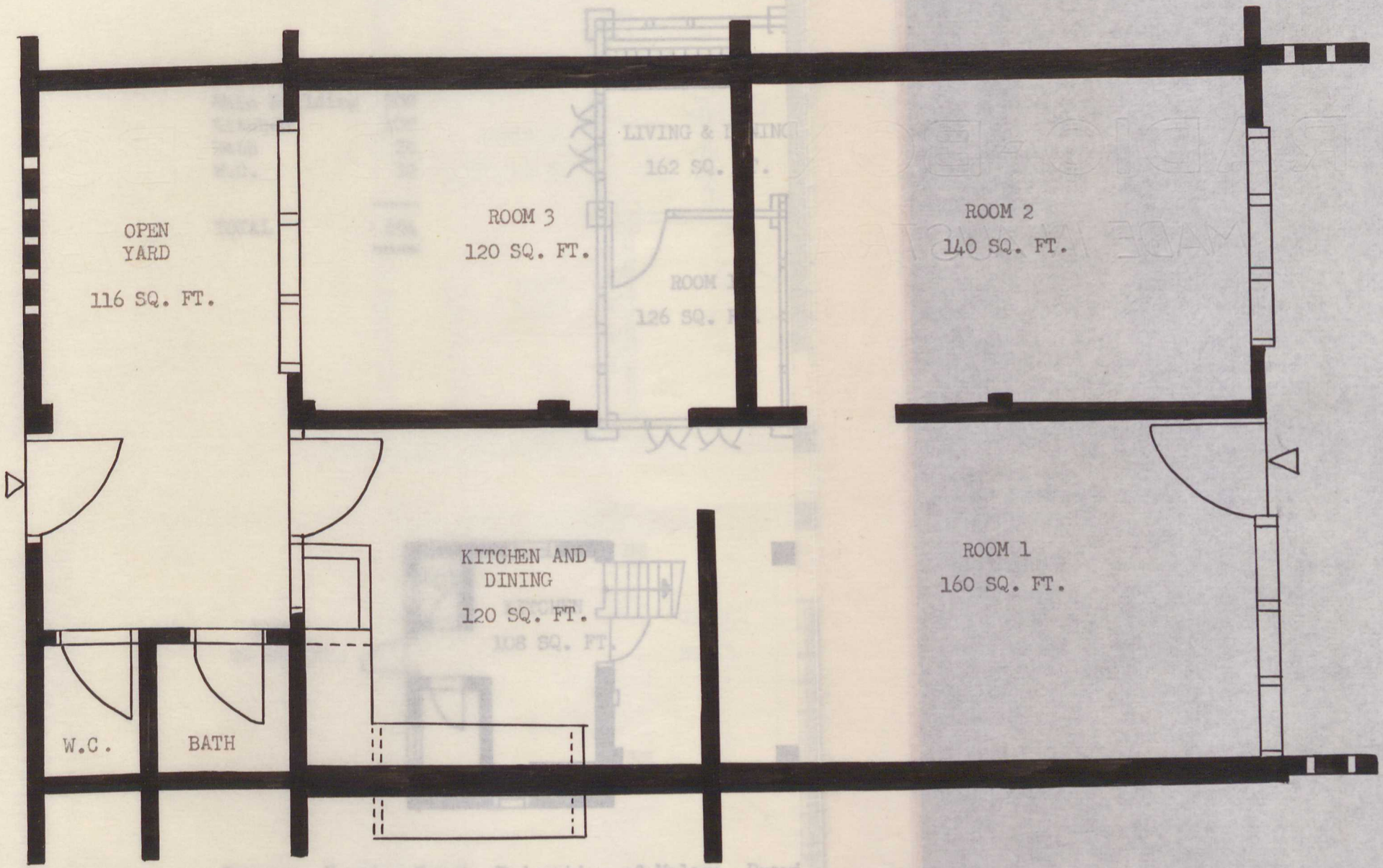


Floor Area	508 Sq. Ft.
Kitchen	137 Sq. Ft.
Bath	16 Sq. Ft.
TOTAL	661 Sq. Ft.

Source: Housing Trust, Federation of Malaya
Drawing No. HT.1289/1

APPENDIX E(ii)

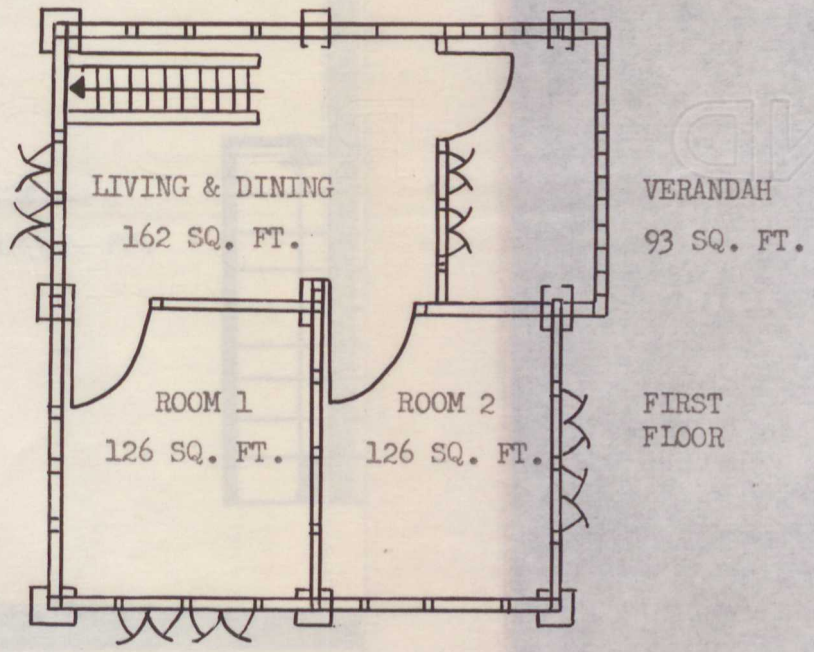
HOUSE TYPE: L 3/3

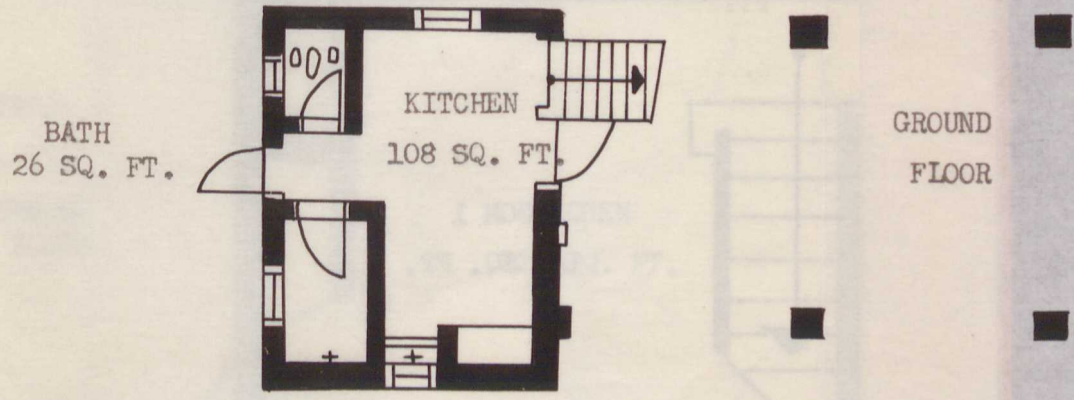


Source: Housing Trust, Federation of Malaya,
Drawing No: HT.1307

APPENDIX E(iii) - HOUSE TYPE: TB 4/2

Floor Area:	Sq. Ft.
Main Building	508
Kitchen	108
Bath	26
W.C.	12
TOTAL	654



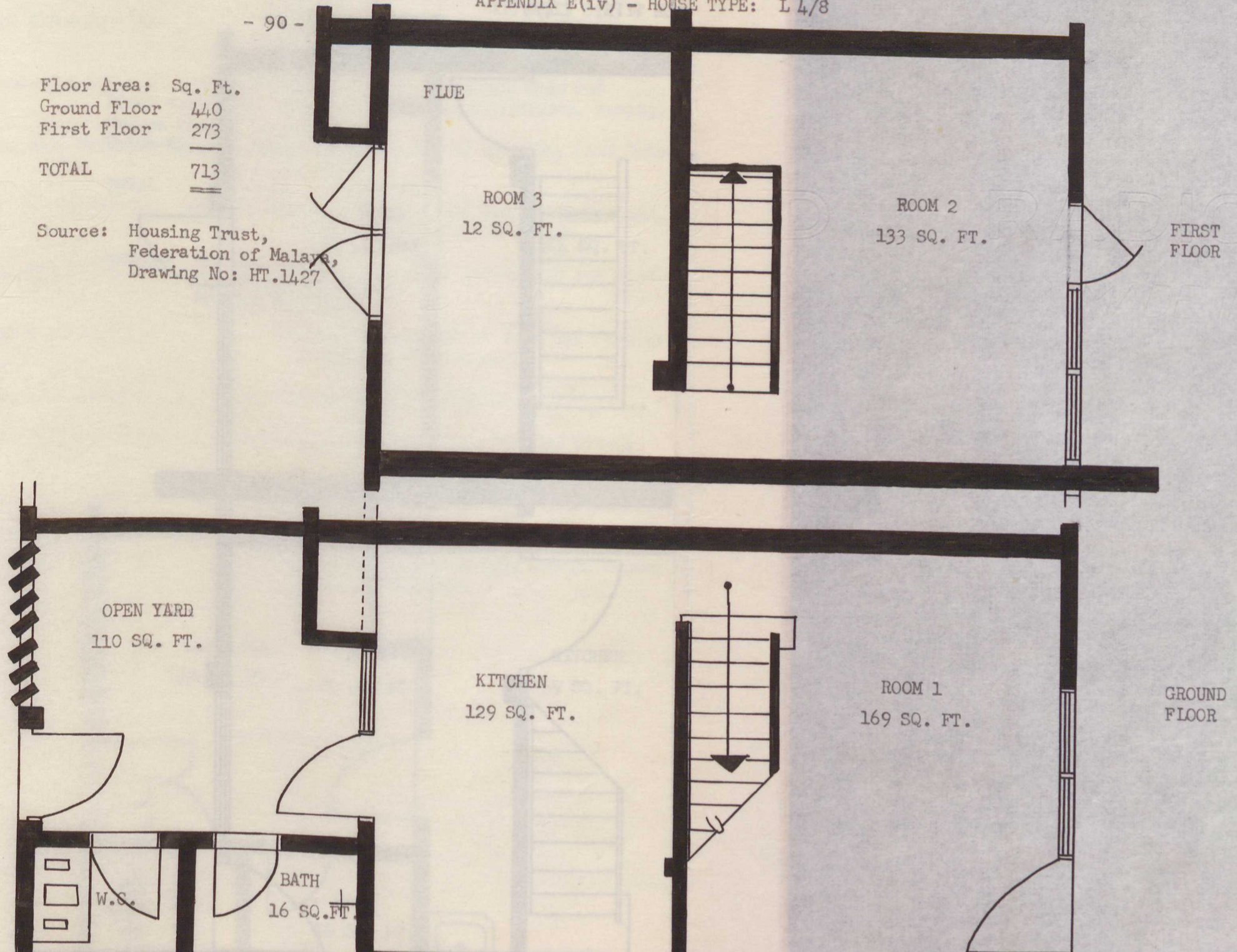


Source: Housing Trust, Federation of Malaya, Drawing No. HT.1691

APPENDIX E(iv) - HOUSE TYPE: L 4/8

Floor Area:	Sq. Ft.
Ground Floor	440
First Floor	273
TOTAL	713

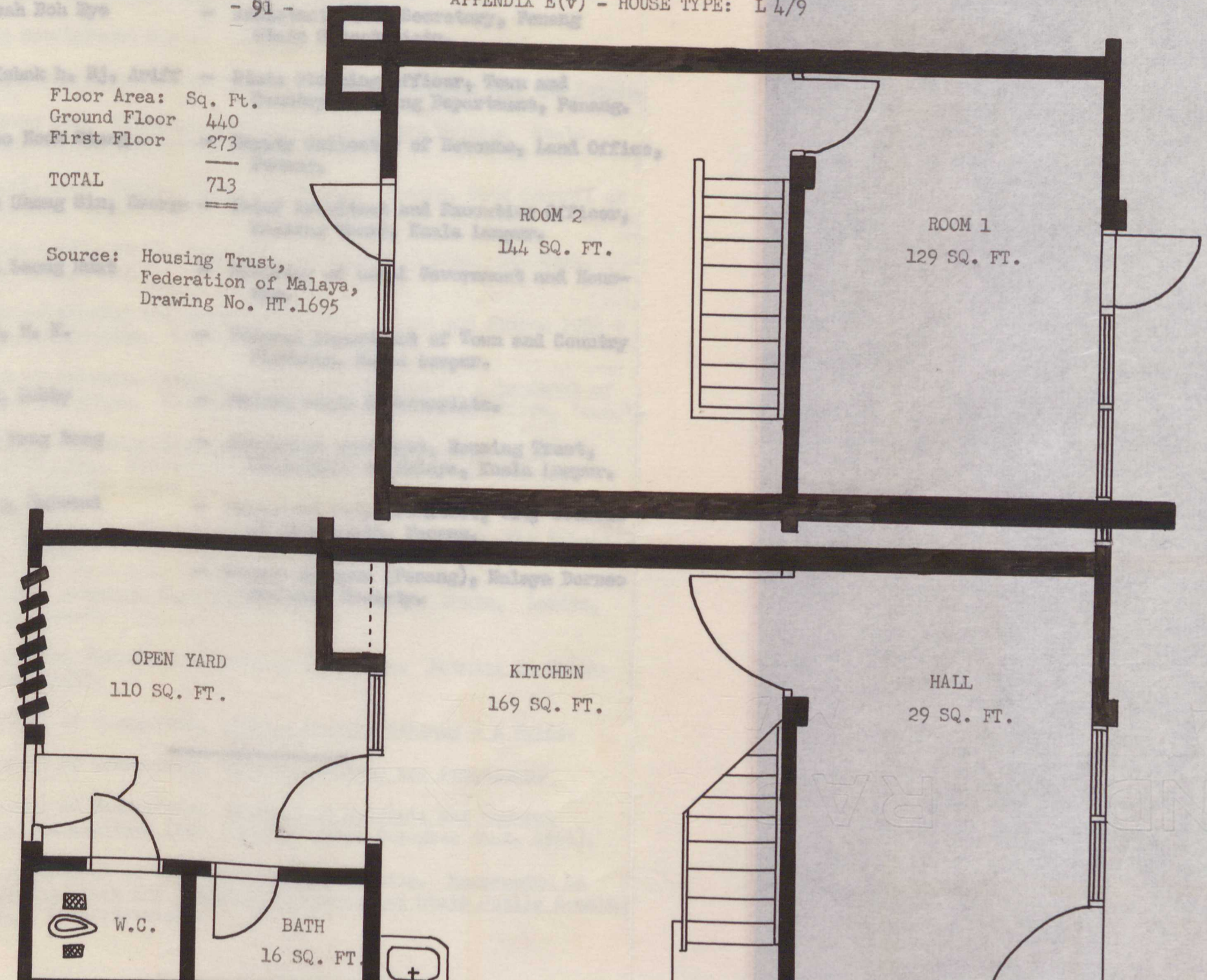
Source: Housing Trust,
Federation of Malaya,
Drawing No: HT.1427



APPENDIX E(v) - HOUSE TYPE: L 4/9

Floor Area:	Sq. Ft.
Ground Floor	440
First Floor	273
TOTAL	713

Source: Housing Trust,
Federation of Malaya,
Drawing No. HT.1695



APPENDIX F

LIST OF PEOPLE INTERVIEWED

1. Mr. Anwar Fazal – Assistant City Secretary, City Council of Georgetown, Penang.
2. Mr. Boey Hou Meng – Assistant Architect, Housing Trust (Regional Office – North).
3. Mr. Cheah Boh Eye – Assistant State Secretary, Penang State Secretariate.
4. Inche Ishak b. Hj. Ariff – State Planning Officer, Town and Country Planning Department, Penang.
5. Mr. Khoo Hock Siang – Deputy Collector of Revenue, Land Office, Penang.
6. Mr. Lee Chong Sin, George – Chief Architect and Executive Officer, Housing Trust, Kuala Lumpur.
7. Mr. Ooi Leong Huat – Ministry of Local Government and Housing.
8. Mr. Sen, M. K. – Federal Department of Town and Country Planning, Kuala Lumpur.
9. Mr. Tan, Bobby – Penang State Secretariate.
10. Mr. Tan Kong Hong – Assistant Architect, Housing Trust, Federation of Malaya, Kuala Lumpur.
11. Mr. Tong, Raymond – Assistant City Architect, City Council of Georgetown, Penang.
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